AIRCREW TRAINING MANUAL
CARGO AIRPLANE
C-23

February 2004

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NATIONAL GUARD BUREAU

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY OPERATIONAL SUPPORT AIRLIFT AGENCY
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REPLY TO
ATTENTION OF

OSAA-ST

18 February 2004

MEMORANDUM FOR RECORD

SUBJECT: Approval of Training Circular (TC) 1-C23, Aircrew Training Manual (ATM), C-23 Cargo Airplane

1. Training Circular 1-C23, Aircrew Training Manual, C-23 Cargo, is approved for training of Army aviation crewmembers in the C-23 Cargo Airplane.

2. The final revision was completed 18 February 2004, at Fort Belvoir, Virginia. Effective date of the ATM is 18 February 2004 with an implementation date of not later than 31 March 2004.

3. Recommended changes or additions to this manual must be submitted to Commander, Operational Support Airlift Agency, ATTN: OSAA-ST-FS (OSAA Standards), 6970 Britten Drive, Suite 201, Fort Belvoir, VA 22060-5133.

4. Point of contact is OSAA Standards at DSN 656-7010 or commercial 703-806-7010.

By Order of the Director, Army National Guard:

ROGER C. SCHULTZ
Lieutenant General, GS
Director, Army National Guard

OFFICIAL:

MANUEL L. QUITERIO III
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TRAINING CIRCULAR
No. 1-C23

HEADQUARTERS
NATIONAL GUARD BUREAU
Washington, DC, 18 February 2004

AIRCREW TRAINING MANUAL
C-23 CARGO AIRPLANE

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PREFACE

This publication is intended as a guide for establishing C-23 aircrew qualification, refresher, mission, and continuation training programs. The Army's Aircrew Training Program is designed to aid aviation unit commanders at all levels in improving unit readiness, safety, and professionalism.

This ATM is the basic document that standardizes aircrew training and flight evaluation procedures. The standardization of requirements, procedures and practices ensures that standard techniques and procedures will be used in everyday flying. By using the ATM, the commander can ensure that crewmember proficiency is matched with the unit's mission. This publication applies to unit commanders, instructors, evaluators and crewmembers that operate the C-23 aircraft.

The aircraft Flight and Crew Manuals contain aircraft operating procedures. If differences exist between the maneuver descriptions in the Crew Manual and this publication, this publication is considered the governing authority. Implementation of this publication must conform to AR 95-1, NGR (AR) 95-1, TC 1-210, and NGR 95-210. The unit commander must provide specific guidance for implementing the training outlined in this publication.

The proponent of this publication is Chief, National Guard Bureau. Submit changes for improving this publication on DA Form 2028 (Recommended Changes to Publications and Blank Forms), and forward it through the aviation unit commander to Commander, Operational Support Airlift Agency, ATTN: OSAA-ST-FS (OSAA Standards), 6970 Britten Drive, Suite 201, Fort Belvoir, VA 22060-5133.

This publication implements the following international agreement: STANAG 3114 (Edition 6) / Air Standard 60 / 16, Aeromedical Training of Flight Personnel.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

This publication has been reviewed for operational security considerations.

CHAPTER 1

INTRODUCTION

This Aircrew Training Manual (ATM) describes training requirements for crewmembers. It will be used with Army regulation (AR) 95-1, AR 600-105, National Guard Regulation (NGR) 95-210, Training Circular (TC) 1-210, and other applicable publications. The tasks in this ATM enhance training in individual and aircrew proficiency. The training focuses on the accomplishment of tasks supporting the unit's mission. The scope and level of training for individual crewmembers and collective aircrews will be dictated by the mission essential task list (METL). Commanders must ensure that aircrews are proficient in mission-essential tasks.

1-1. CREW STATION DESIGNATION

a. The commander will designate appropriate crew station(s) for each crewmember. Crewmembers will train, and must maintain proficiency, in each crew station they are designated to occupy. Instructor pilots (IP), standardization instructor pilots (SP), and instrument examiners (IE) must maintain proficiency in both seats. Commanders may designate other aviators in both seats. Aviators designated to fly from both pilots seats will be evaluated in each seat during annual proficiency and readiness test (APART) evaluations. This does not mean that all tasks must be evaluated in each seat. Commanders will develop a program to meet this requirement. IPs, SPs, IEs and UTs may conduct training or evaluations from a non-crewmember station if authorized by the commander.

b. FE/FI/SI crew station is based upon the role equipment installed:

(1) Passenger Role: The aisle seat on the first double, or the first installed single seat.

(2) Cargo Role: If installed, the first double seat on the aisle. Otherwise, the first single seat or, lastly, the jump seat

(3) Paradrop Role: The right rear troop seat.

(4) Medevac Role: If installed the first single seat or, lastly, the jump seat.

(5) During evaluations the FI/SI will select a station that provides clear view of the examinee's activities and ensures the ability of the FI/SI to move and quickly intervene, if necessary.

1-2. SYMBOL USAGE, AND WORD DISTINCTIONS

a. Symbol Usage. The diagonal (/) indicates or and. For example, IP/SP may mean IP or SP or may mean IP and SP.

b. Word Distinctions.

(1) Warning, caution, and note. These words emphasize important and critical instructions.

(a) A warning indicates an operating procedure or a practice which, if not correctly followed, could result in personal injury or loss of life.

(b) A caution indicates an operating procedure or a practice which, if not strictly observed, could result in damage to or destruction of equipment.

(c) A note indicates an operating procedure or condition that is essential to highlight.

(2) Will, must, shall, should and may. These words distinguish between mandatory, preferred, and acceptable methods of accomplishment.

(a) Will, must or shall indicate a mandatory requirement.

(b) Should indicate a preferred, but not mandatory, method of accomplishment.

(c) May indicate an acceptable method of accomplishment.

(3) Nonrated crewmember.

(a) Flight Engineer. An FE performing duties in accordance with the C-23 Airplane ATM.

(b) Flight Engineer Instructor. A qualified FI performing duties in accordance with the C-23 Airplane ATM.

(c) Standardization Flight Engineer. A qualified SI performing duties in accordance with the C-23 Airplane ATM.

(4) Rated crewmember. The term "rated crewmember," "aviator," and "pilot" are used synonymously.

(a) Evaluator. Unless otherwise specified, the word "evaluator" refers to the IP, SP, IE, FI, or SI.

(b) Pilot Flying. (PF) Normally the aviator performing duties in the left seat.

(c) Pilot Not Flying. (PNF) Normally the aviator performing duties in the right seat.

(d) Pilot in Command. (PC) An aviator who meets the requirements of AR 95-1 and flies from a crew station designated by the commander.

1-3 APPLICABILITY

Operators of C-23B/B+/C series airplanes will use this manual. This manual also applies to future versions of the C-23 that are modified by the Program Executive Officer – Aviation (PEO-AVN).

Chapter 2

TRAINING

This chapter describes requirements for qualification, readiness level (RL) progression, and continuation training. Crewmember qualification requirements will be according to AR 95-1, TC 1-210, and this ATM.

2-1. QUALIFICATION TRAINING

a. Fixed-Wing Qualification. Initial fixed-wing qualification training will be conducted at the U.S. Army Aviation Center (USAAVNC), or a DA-approved training site according to a USAAVNC-approved program of instruction (POI).

(1) Active Army and U.S. Army Reserve (USAR) Aviators. An active Army or a USAR aviator is qualified in fixed-wing aircraft when he has graduated from the qualification course conducted by USAAVNC.

(2) Army National Guard (ARNG) Aviators. An ARNG aviator must complete the fixed-wing qualification course conducted by the USAAVNC or a course approved by the Chief, National Guard Bureau (CNGB) and USAAVNC. Qualification training will be completed within 90 consecutive days.

b. C-23 Aircraft Qualification. C-23 Qualification training will be accomplished in accordance with (IAW) AR 95-1.

c. Nonrated Crewmember. (NCM) Qualification training will include instruction in both academic and flight subjects. Qualification training will be conducted IAW an NGB approved Program of Instruction (POI).

2-2. UNIT TRAINING

a. General. Commanders may conduct refresher training and series qualification at the unit level.

b. Training restrictions.

(1) Low-pressure high-altitude physiology training must be current prior to beginning flight training.

(2) A crewmember may start flight training without a current fixed-wing instrument qualification. However, he cannot advance to RL 2, until he has met the category instrument qualification requirements outlined in AR 95-1.

2-3. SERIES QUALIFICATION TRAINING

To become qualified in a different series of C-23 an aviator must—

a. Academic training. Receive sufficient academic instruction to ensure a thorough knowledge of the differences between the aircraft qualified in and the aircraft in which training will be conducted. Minimum recommended academic subjects are:

- Aircraft Systems Differences
- Navigation/Communication/EGPWS/TCAS/EFIS systems if installed
- Performance Planning
- Limitations
- Emergency procedures

b. Flight training. The minimum flights tasks for C-23 series qualification are those tasks required for a standardization evaluation with emphasis on systems, avionics, and procedures unique to that aircraft series. The intent of the flight training is to provide the aviator with skills necessary to effectively, efficiently and safely operate onboard systems to their full capability.

2-4. INDIVIDUAL TRAINING (RL 3)

Crewmembers are designated RL 3 when they are required to gain, or regain, proficiency in all base tasks. Crewmembers will receive training in the crew stations in which they are authorized to perform crew duties. Crewmembers undergoing RL 3 training in the aircraft must fly with an SP, IP, IE, SI or FI as appropriate. Crewmembers progress from RL 3 by demonstrating proficiency in all base tasks (day, night, and instruments) to an SP, IP, IE, SI or FI as appropriate.

a. Newly assigned crewmembers. A crewmember who has not flown within the previous 180 days must be designated RL 3 for refresher training. Rated crewmembers should attend a C-23 simulator training course prior to training. The crewmember must be trained and subsequently demonstrate proficiency in all base tasks to an SP, IP, IE, SI or FI as appropriate for advancement to RL 2. If a crewmember entering the ATP has flown within the past 180 days, but not the previous 60 days, the commander may require him to undergo refresher training. The commander will base his decision on a records check and/or a Proficiency Flight Evaluation (PFE) for aircraft currency. The commander will establish a training plan for a crewmember that does not demonstrate proficiency in any tasks during this PFE. A crewmember demonstrating a lack of proficiency in base tasks must, as a minimum, demonstrate proficiency in those tasks to an SP, IP, IE, SI or FI as appropriate for advancement to RL 2.

(1) During RL 3 training crewmembers do not have minimum hour, iteration, or APART requirements in the aircraft in which the training is conducted. The only requirements are those designated by the commander, aircraft currency requirements and AR 600-105 (annual Flying Duty Medical Examination).

(2) A day and night local area orientation flight per TC 1-210 must be completed prior to progressing to RL 1.

b. Refresher Training Requirements (RL 3). Crewmembers will receive refresher training in the crew stations in which they are authorized to perform crew duties. Commanders will designate the right seat tasks in which the aviator must demonstrate proficiency.

(1) Academic training. The crewmember will receive training and demonstrate a working knowledge of the applicable topics below and complete the AFM/Crew manual written examination.

- Introduction
- Pitot static system
- Powerplant
- Flight controls

- Propeller system
- Landing gear
- Electrical system
- Performance charts and planning
- Fuel system
- Weight and balance
- Environmental system
- Flight planning, to include the Department of Defense (DOD) Flight Information Publication (FLIP)
- Instrument departures, en route navigation, and reporting
- Anti-ice and de-ice systems
- Instrument approaches
- Oxygen system
- Local standard operating procedures (SOPs) and regulations
- Crew coordination

(2) Flight training. The crewmember will receive training and demonstrate proficiency in each base task appropriate to the aircraft in Table 2-2. Table 2-1 is a guide for developing a refresher flight training hour requirement. Actual hours will be based on individual proficiency.

Table 2-1. Refresher flight training guide

Flight Instruction	Rated Hours	Nonrated Hours
Local area orientation	1.0	1.0
Demonstration and practice of base tasks	6.0	2.0
Flight Evaluation	2.0	2.0
Total Hours	9.0	5.0
Instrument Instruction		
Flight training	16.0	
Instrument evaluation	2.0	
Total Hours	18.0	

(3) Night training. The crewmember will complete a one-hour flight (minimum) at night. The training must include all tasks marked with an "X" in the night column of Table 2-2. The aviator must occupy the pilot station. Training in night operations must include locating and operating all aircraft lighting systems.

c. Regressing crewmembers. Crewmembers failing to demonstrate proficiency in any base tasks during any evaluation will be designated RL 3. The commander will establish a training plan for the crewmember. The crewmember must be trained and subsequently demonstrate proficiency in the base tasks determined to be below standard to a SP, IP, IE, SI or FI as appropriate before being reinstated to the appropriate RL status. A crewmember regressed to RL 3 must meet his existing flying hour and task iteration requirements.

(1) Academic training. After an unsatisfactory evaluation, the commander establishes academic requirements applicable to the base tasks evaluated as unsatisfactory. The crewmember will receive training and demonstrate a working knowledge of those topics.

(2) Flight training. The commander will determine the tasks to be trained as part of the crewmember's training plan. As a minimum, the crewmember must train and demonstrate proficiency in the tasks evaluated unsatisfactory. The commander may establish additional tasks for training and evaluation as part of the crewmember's training plan.

2-5. MISSION TRAINING (RL 2)

TC 1-210 outlines mission training requirements and guidelines for developing a mission training program. Mission training develops the crewmember's ability to perform specific mission/additional tasks selected by the commander to support the unit's METL. Upon completion of RL 3 series or refresher training, the crewmember may perform PI/FE duties while undergoing RL 2 training with a UT, IP, SP, IE, FI or SI. Mission training may be accomplished while performing missions. Proficiency in mission-related tasks is the goal. During mission training, a crewmember does not have minimum hour, task iteration, or APART requirements in the aircraft in which the training is conducted. The only requirements are those designated by the commander, aircraft currency requirements and AR 600-105 (annual flying duty medical examination).

a. Academic Mission Training. The commander should tailor mission academic training to fit the needs of the unit's mission and METL.

b. Flight training. The crewmember will receive flight training and demonstrate proficiency in the mission and additional tasks, in each mode, as specified on the task list for the crewmember's position.

2-6. CONTINUATION TRAINING (RL 1)

A crewmember begins continuation training after completing series or refresher training and mission training. The commander may designate a crewmember to be in this phase of training after a records review or proficiency flight evaluation. During continuation training, a crewmember is assigned flying hour, task iteration, and APART requirements via the DA Form 7120-R, Commander's Task List. Continuation training requirements are listed below.

a. Semiannual Aircraft Flying-Hour Requirements.

(1) Rated crewmember.

(a) Flight activity category (FAC) 1 - 55 hours.

(b) FAC 2 - 30 hours

(c) FAC 3 - There is no provision to designate fixed-wing crewmembers as FAC 3.

(2) Nonrated crewmember.

(a) FAC 1 – 30 hours.

(b) FAC 2 – 24 hours.

NOTES:

1. UTs, IPs, SPs, IEs, SIs and FIs may credit hours they fly while performing assigned duties toward their semiannual flying hour requirements.

2. Aviators may credit up to six hours of compatible simulator flight time toward their semiannual flying hour requirement.

b. Annual Task and Iteration Requirements.

(1) FAC 1 and FAC 2. Crewmembers must perform at least one task iteration annually in each mode they are required to fly, as indicated in Table 2-2, and those mission and additional tasks designated on the Commander's Task List (CTL). One iteration of each task that can be trained in the aircraft must be performed in the aircraft. Day iteration tasks performed at night may be counted for day iterations. The crewmember is responsible for maintaining proficiency in each task. The commander may require additional iterations of specific tasks.

(2) FAC 3. There are no provisions to designate fixed-wing crewmembers as FAC 3.

c. Additional Aircraft Requirements. The requirement to perform instrument tasks in additional aircraft will be at the discretion of the commander.

2-7. ACADEMIC CONTINUATION TRAINING

Units must develop an academic training program to reinforce crewmember aviation skills. Academic training may be conducted in any suitable environment; for example, a classroom, hangar, flight line, or field site. Academic training may be oral, written, computer-based-instruction (CBI), or distance learning and may be conducted either individually or in groups. Topics listed in paragraph 3-3 should be considered in the development of the unit's academic training program.

2-8. TASK LISTS

a. Base Tasks. Base tasks are 1000-series tasks and are listed in Table 2-2. An X in the mode of flight column (D-Day, I-Instrument, N-Night) denotes the task as a base task for that mode of flight.

b. Mission Tasks/Additional Tasks. Mission tasks are 2000-series tasks. The commander may design additional 3000-series tasks based on the unit METL.

c. Evaluation Guidelines. Tasks in the EVAL column of Table 2-2 that are identified with an "S" denote mandatory tasks for the Standardization Flight Evaluation. Tasks identified with an "I" indicate a mandatory task for the Instrument Flight Evaluation. The use of the word "or" indicates a task that may be evaluated on either the standardization or instrument flight evaluation. The commander should select mission/additional tasks for evaluation that support the unit's METL.

Table 2-2. Crewmember Base Task List

Task	*Title*	*D*	*I*	*N*	*EVAL*
1000 [CM]	Conduct crew mission briefing	X	X	X	S[CM] &I
1004 [R]	Plan a visual flight rules (VFR) flight. See note 1.	X			S
1007 [R]	Plan an instrument flight rules (IFR) flight. See note 1.		X		I
1014 [CM]	Verify / Prepare Weight and Balance	X			S[FE]
1022 [R]	Prepare TOLD card	X	X		S&I
1023 [R]	Perform flight at minimum control speed with critical engine				

Task	*Title*	*D*	*I*	*N*	*EVAL*
	inoperative. (Vmc, SIMULATOR ONLY) See note 4.				
1029 CM	Perform preflight inspection	X	X	X	S[CM] or I
1035 CM	Perform engine start	X	X	X	S[CM]
1040 CM	Perform aircraft taxi	X		X	S[CM]
1045 R	Perform engine run-up	X		X	S
1057 CM	Perform or describe emergency egress	X			S[CM]
1058 FE	Perform or describe aircraft refueling				S[FE]
1059 FE	Perform or describe aircraft security check				S[FE]
1060 FE	Perform ramp door operation				S[FE]
1061 FE	Perform or describe internal load operations	X			S[CM]
1095 CM	Operate aircraft survivability equipment				S[FE]
1104 CM	Perform normal takeoff and climb	X		X	S[R]
1105 CM	Perform military takeoff and climb	X			S[R]
1120 CM	Perform steep turns	X			S[R]
1122 R	Perform climbs and descents	X			S
1125 R	Perform slow flight	X			S
1138 CM	Perform fuel management procedures	X	X	X	S[CM] &I
1144 R	Perform touch and go (Required for IP/SPs Only)	X			S
1145 CM	Perform normal landing	X		X	S[R]
1146 CM	Perform military landing	X			S[R]
1177 R	Perform go-around	X		X	
1182 CM	Perform radio communications	X	X		
1201 R	Perform instrument takeoff		X		I
1210 R	Perform holding procedures		X		I
1212 R	Perform enhanced ground proximity warning system (EGPWS) / terrain avoidance warning system (TAWS) operations	X	X		S or I
1215 R	Perform precision approach. See note 2.		X		I
1220 R	Perform non-precision approach. See note 3.		X		I
1240 R	Perform missed approach		X		I
1245 R	Perform unusual attitude recovery	X	X		S or I
1250 R	Perform autopilot/flight director operations		X		
1254 R	Perform IFR navigation		X		
1260 R	Operate weather avoidance system	X	X		S or I
1262 R	Perform circling approach		X		
1265 R	Perform traffic alert and collision avoidance system (TCAS) operations.	X	X		S or I
1300 CM	Perform emergency procedures	X	X		S[CM] or I
1302 R	Perform procedures for two-way radio failure	X	X		S or I
1303 R	Perform approaches to stalls	X			S
1310 CM	Perform emergency procedures for engine failure during cruise flight	X	X		S[R] or I
1315 CM	Perform single-engine landing	X			S[R]
1320 R	Perform single-engine go-around	X			S
1325 CM	Perform emergency procedures for engine failure during takeoff	X			S[R]
1335 CM	Perform emergency procedures for engine failure during final approach	X			S[R]
1352 R	Perform rejected takeoff	X			
1800 CM	Perform after-landing tasks	X	X	X	S[CM] &I

Task	*Title*	*D*	*I*	*N*	*EVAL*
NOTES 1. When tasks 1004 and 1007 are performed in the primary aircraft, they do not have to be performed in the additional aircraft. 2. Task 1215 must be evaluated at least once annually while the aircraft is operating under single-engine. 3. Task 1220 will be evaluated at least once annually utilizing the FMS and once using VOR/ADF. 4. Task 1023 is a simulator only maneuver and has no annual task iteration or evaluation requirement. 5. [FE] indicates non-rated crewmember task only. [R] indicates rated crewmember task only. [CM] indicates both rated and non-rated crewmember task					

Table 2-2. Crewmember Base Task List

2-9. SIMULATOR TRAINING

a. Fixed-wing aviators serving in C-23 assignments will complete C-23 simulator training within 12 to 18 months after completing initial qualification.

b. Aviators qualified in a C-23 but not having served in an operational C-23 assignment for 12 months or more will receive C-23 simulator training prior to unit assignment and /or progressing to RL 2.

c. Aviators currently serving in C-23 assignments will receive C-23 simulator biennially.

d. Fixed-wing aviators may apply six hours of compatible simulator flight time to their semi-annual flying hour requirement.

e. Aviators failing to meet the Aircrew Training Program (ATP) requirements set forth in this paragraph will be processed in accordance with AR 95-1.

2-10. MAINTENANCE TEST PILOT

Does not apply to the C-23.

2-11. ANNUAL NUCLEAR, BIOLOGICAL, CHEMICAL (NBC) TRAINING REQUIREMENTS

Annual NBC training is mandatory for all FAC 1 positions and those FAC 2 positions selected by the commander IAW TC 1-210. Aviators must wear full mission oriented protective posture (MOPP) gear during NBC training. When required, the minimum tasks required for NBC training are listed below. Commanders may select mission/additional tasks based on the unit's mission.

Task	Task Title
1029	Perform preflight inspection
1035	Perform engine start
1040	Perform aircraft taxi
1104	Perform normal takeoff and climb
1145	Perform normal landing
1800	Perform after landing tasks

Table 2-3 NBC Training Tasks

2-12. AIRCRAFT SURVIVABILITY EQUIPMENT TRAINER (ASET) TRAINING REQUIREMENTS

ASET training will be performed according to TC 1-210 and current guidance. Units will incorporate Mode 4/Identification, Friend or Foe (IFF), M130/ALE47 and AN/ALQ-156(V) training into unit aviation academic programs and train, as a minimum, once annually.

Chapter 3

EVALUATIONS

This chapter contains guidelines for conducting the hands-on performance test component of the APART and proficiency, post accident, medical, no-notice, and commander's evaluations. The conduct of flight evaluations is a principal means of assessing flight standardization and crewmember proficiency. These evaluations are a key part of Army aviation standardization.

3-1. EVALUATION PRINCIPLES

a. The evaluation must assess the examinee's ability to perform essential hands-on tasks to the standards prescribed in Chapter 4. It also must assess the crewmember's ability to exercise crew coordination in completing these tasks.

b. The guidelines for evaluating crew coordination are not based on objective criteria; for example, distances or degrees. Rather, they are based on a subjective analysis of how effectively a crew performs together to accomplish a series of tasks. The subjective analysis is as important as the objective evaluation of the more definitive measurable tasks. The evaluator measures crew coordination skills on the basis of subjective judgment, which is more difficult than objectively measuring the skill to accomplish a specific task.

c. Evaluation requires an analysis of how each crewmember performs the crew coordination actions included in each ATM task. The evaluator must determine how effectively the examinee communicates and how effectively he sequences and times critical actions to complete a task successfully.

d. Evaluation of communication skills should include an analysis of how well the crewmember understands current and planned actions. Does the crewmember communicate current and proposed tasks effectively? Does the crewmember announce information before initiating a task so that the evaluator or other crewmembers are cued to perform their portion of the task?

e. In evaluating aircraft communication, the evaluator must determine how effectively the crewmember uses standard aviation terminology. Use of this terminology is essential to ensure a clear, concise flow of information in the aircraft. The evaluator should correct any disuse or misuse of these terms on the spot to reinforce their proper usage.

f. The sequencing and timing of actions between crewmembers is critical. For example, the evaluator should expect the PF to forewarn him of planned maneuvers. As the PNF, the evaluator should announce his intentions to the PF. These announcements permit the proper sequencing of required follow-on actions. Failure to announce a task, such as a nonstandard exit turn from a crowded traffic pattern, could result in failure of the other crewmember to provide clearing during the turn.

g. In all phases of individual instruction and evaluation, the evaluator is expected to perform as a crewmember in good faith. At some point during the evaluation, circumstances may prevent the evaluator from performing as a crewmember. In such cases, a realistic and meaningful method should be developed to pass this task back to the examinee effectively. In all

other situations, the evaluator must perform as outlined in the task description or as directed by the examinee. The examinee must know that he is being supported by a fully functioning crewmember.

h. The value of any evaluation depends on strict adherence to fundamental evaluation principles; anything less than strict adherence makes the evaluation meaningless. These principles are described below.

(1) The evaluators must be selected not only for their technical qualifications but also for their performance, clearly demonstrated objectivity, and ability to observe and provide constructive comment.

(2) The method by which the evaluation is conducted must be based on uniform objectives and standards. Most importantly, it must be consistent with the mission of the unit and IAW appropriate regulations, manuals, and SOPs.

(3) The purpose of the evaluation must be completely understood by all concerned and conducted in a manner that is purpose-oriented.

(4) Cooperation by all participants must be ensured to guarantee fulfillment of the evaluation objectives.

(5) Specific findings must be produced by the evaluation purpose, what might be done better, and how improvements can be made. General comments do not always provide the direction and guidance essential to improvement. To the extent the evaluation pinpoints both strength and weakness, it can serve the purpose for which it was intended.

3-2. GRADING CONSIDERATIONS

a. Academic. Proficiency in the oral examination must be based upon the evaluator's assessment that the examinee possesses a working knowledge and understanding of the subject areas presented.

b. Flight. Standards of performance are presented for the ideal situation. Grading is based on meeting the minimum standards. The evaluator must consider deviations (for example, high winds, turbulence, poor visibility) from the ideal during the evaluation. If other than ideal conditions exist, the evaluator must make appropriate adjustments to the standards.

NOTE: If a task is accomplished in a more demanding mode of flight, it may suffice for the evaluation of the task in a less demanding mode of flight. (The commander will determine which mode of flight is more demanding.

3-3. CREWMEMBER FLIGHT EVALUATION

Evaluations are conducted to determine the crewmember's ability to perform the tasks selected on the CTL, and check understanding of required academic subjects listed in the ATM. When the examinee is an evaluator/trainer, the recommended procedure is for the evaluator to reverse roles with the examinee. When the evaluator uses this technique, the examinee must understand how the role-reversal will be conducted and when it will be in effect. Initial validation of an evaluator's qualifications at a new duty station will be conducted in the aircraft.

a. Performance Criteria.

(1) Pilot (PI). The PI must demonstrate an understanding of the tasks on the CTL, including conditions, standards, descriptions, and appropriate considerations. The examinee must perform selected tasks to ATM standards while applying aircrew coordination principles. The PI must demonstrate a basic understanding of the appropriate academic subjects from the ATM, familiarization with the individual aviator training folder (IATF), and understanding of the CTL.

(2) Pilot in Command (PC). The PC must meet the requirements in paragraph 3-3a(1), and must demonstrate sound judgment and maturity in the management of the mission, crew, and assets.

(3) Unit Trainer (UT). The UT must meet the PC requirements in paragraph 3-3a(2), and must be able to instruct in the appropriate tasks and subjects. Further, he must be able recognize errors in performance, understanding, and make recommendations for improvement.

(4) Instructor Pilot (IP). The IP must meet the PC requirements in paragraph 3-3a(2), and must be able to objectively train, evaluate, and document performance of the PI, PC, and UT, using role-reversal for UT training, as appropriate. The IP must be able to develop and implement an individual training plan, and have a thorough understanding of the requirements and administration of the ATP.

(5) Standardization Pilot/Instrument Examiner (SP/IE). The SP must meet the requirements in paragraph 3-3a(4). The IE must meet the requirements of paragraph 3-3a(2). The SP/IE must be able to train and evaluate IEs/IPs/SPs, as appropriate, using role-reversal. The SP must also be able to develop and implement a unit-training plan and administer the commander's ATP. If the IE is not also an IP or SP, the IE must be evaluated to perform unusual attitude recoveries and simulated engine failures according to AR 95-1. IEs who are not fixed wing IP/SPs may only initiate simulated engine failures and unusual attitude recoveries in cruise flight. He cannot initiate the maneuver while on an instrument approach or in the traffic pattern.

NOTE: Crewmembers must be evaluated in the flight stations authorized on their CTLs. All tasks are not required to be evaluated from all flight stations. Evaluators will select tasks to be evaluated from each flight station appropriate to the duties for that station and individual flight duty qualification. A SP/IP/IE/UT cannot be administered an evaluation while occupying a seat in the aircraft cabin.

b. Evaluation Criteria.

(1) Proficiency Flight Evaluations. These evaluations are conducted according to AR 95-1 and TC 1-210. The commander will select the topics and flight tasks to be evaluated for the type of evaluation being conducted.

(2) APART Standardization Flight Evaluation. The IP/SP/FI/SI will evaluate a minimum of two topics from each subject area below. If the evaluated crewmember is an IP/SP/FI/SI, the SP/SI will evaluate the examinee’s ability to instruct tasks.

(3) APART Instrument Flight Evaluation. The IE will evaluate a minimum of four topics from the subject areas below relative to instrument flight rules and planning. If the evaluated crewmember is an IP/SP, the IE will evaluate the IP’s/SP’s ability to instruct instrument-related tasks.

3-4. EVALUATION SEQUENCE

The evaluation sequence will consist of four phases. The evaluator will determine the amount of time devoted to each phase.

a. Phase 1 – Introduction. In this phase, the evaluator-

(1) Reviews the examinee's records to verify that the examinee meets all prerequisites for the rating.

(2) Confirms the purpose of the flight evaluation, explains the evaluation procedure, and discusses the evaluation standards and criteria to be used.

b. Phase 2 - Academic Oral Evaluation Topics. The evaluator should avoid asking questions that require reciting lists. The evaluator should ask questions that are easily understood, have a definite answer, and are relevant to determining the understanding of a topic. Aerodynamics, tactical and mission tasks, and night tasks are normally not required for instrument evaluations.

(1) Regulations and publications (AR 95-1, DA Pam 738-751; DOD FLIP; TC 1-210; AFM/Crew manual, applicable major Army command (MACOM) supplements, local and unit SOPs). Topics are—

- ATP, IATF/CTL requirements*
- Fuel requirements*
- Crew coordination*
- Crew endurance*
- Performance planning
- Weight and balance requirements*
- Forms, records, and publications required in the aircraft*
- Aviation life support equipment (ALSE)*
- Risk management*

(2) Aircraft systems, avionics, and mission equipment description and operation (AFM/Crew manual). Topics are—

- Landing gear*
- Electrical system*
- Engines and related systems*
- Environmental system*
- Propellers*
- Ice protection*
- Fuel system*
- Pneumatic system*
- Servicing and parking*
- Navigation equipment*
- Transponder / IFF*
- ASE*

(3) Instrument planning and procedures (AR 95-1, AIM, DOD FLIP, AFM/Crew manual, FM 1-230, FM 1-240). Topics are—

- Departure procedures
- Closing flight plans

- Required weather for takeoff, en route, destination and alternate
- Airspace – Types, dimensions and requirements to operate in
- Notices to Airmen (NOTAMs)
- Visual Flight Rules (VFR) requirements
- Terminal Aerodrome Forecasts (TAF)
- Routine aviation weather observation (METAR)
- Flight plan preparation
- DOD FLIP symbology
- Position reports
- Fuel requirements
- Enroute weather services
- Weather hazards
- Transponder requirements
- Arrival procedures

(4) Operating limitations and restrictions (AFM/Crew manual). Topics are—

- Propeller limitations
- Engine limitations
- Weather/environmental limitations/restrictions
- Engine over-temperature and over-speed limitations
- Autopilot limitations
- Generator limitations
- Fuel System limitations*
- Loading limitations*
- Starter limitations
- Airspeed limitations, minimum and maximum
- Maneuvering limitations
- Altitude limitations
- Icing limitations
- Crosswind limitations
- Oxygen requirements*
- Required Equipment Listing (REL)*

(5) Aircraft emergency procedures and malfunction analysis (AFM/Crew manual). Topics are -

- Emergency terms and their definitions*
- Emergency exits and equipment*
- Engine malfunctions*
- Fires*
- Fuel system malfunctions*
- Hydraulic system malfunctions*
- Electrical system emergencies*
- Landing emergencies*
- Flight control malfunctions
- Duct over-temp caution light illuminated*
- Engine bleed air malfunction*
- Low oil pressure
- Ramp Door*

(6) Aeromedical factors (AR 40-8, FM 3-04.301, and TC 1-204). Topics are—
- Flight restrictions due to exogenous factors*
- Hypoxia*
- Stress*
- Middle ear discomfort*
- Spatial disorientation*
- Decompression sickness*

(7) Aerodynamics (FM 1-203 and AFM / Crew manual). Topics are—
- Stall and stall characteristics
- Spins and spin recovery
- V_{mc} causes and prevention
- Asymmetrical thrust
- Torque and P-factor
- Hydroplaning
- Elements of the lift equation
- Turning performance
- Slow flight
- Crosswind landings

(8) Night mission operations (TC 1-204). Topics are—
- Unaided night flight*
- Night vision limitations and techniques*
- Visual illusions*
- Types of vision*
- Distance estimation and depth perception*
- Use of internal and external lights*
- Dark adaptation, night vision protection, and central night blind spot*

(10) SP, IP, IE, FI, SI and UT Evaluator/Trainer topics.
- The learning process
- Human behavior
- Effective communication
- The teaching process
- Teaching methods
- The instructor as a critic
- Types of evaluations
- Instructional aids
- Planning instructional activity
- Techniques of flight instruction
- Flight instructor characteristics and responsibilities

Note: * are nonrated crewmember topics also.

c. Phase 3 - Flight Evaluation. This phase consists of a briefing, preflight inspection and engine-start and run-up procedures, flight tasks, and engine-shutdown and after-landing tasks, and a debriefing.

(1) Briefing. The evaluator will explain the flight evaluation procedure and tell the examinee which tasks he will perform. For IP, SP, IE, SI or FI evaluations, the evaluator must advise the examinee that he may deliberately perform some tasks not according to standard to

check the examinee's diagnostic and corrective action skills. In addition, the evaluator will conduct a crew briefing that includes, as a minimum, the items listed below.

- Mission.
- Weather.
- Flight route.
- Performance data.
- Transfer of flight controls.
- Crew duties, to include emergency duties, especially simulated engine failures.

NOTE: Refer to AFM and local directives for additional crew/passenger briefing requirements.

(2) Preflight inspection and engine-start and run-up procedures. The evaluator will evaluate the examinee's use of the CL. He will also have the examinee properly identify at least two aircraft components and discuss their functions.

(3) Flight tasks. The evaluator will evaluate the tasks identified as mandatory in Table 2-2 and those mission/additional tasks selected by the commander for evaluation. He may also randomly select for evaluation any of the tasks listed on the Commander's Task List. An IP, SP, IE, FI or SI must demonstrate ability to instruct/evaluate appropriate flight tasks. When used as part of the proficiency flight evaluation, the evaluation may include an orientation of the local area, checkpoints, weather, and other pertinent information.

(4) Engine-shutdown and after-landing tasks. The evaluator will evaluate the examinee's use of the CL.

d. Phase 4 - Debriefing During this phase, the evaluator will-

(1) Tell the examinee whether he has passed or failed the evaluation.

(2) Discuss, with the examinee, the examinee's strengths and weaknesses.

(3) Offer the examinee recommendations for improvement.

(4) Complete the applicable forms.

(5) Ensure the examinee reviews and initials the applicable forms.

3-5. ADDITIONAL EVALUATIONS

a. NBC Evaluation. NBC training and evaluation requirements will be established IAW TC 1-210. The commander will evaluate his unit mission and determine if NBC training and evaluations are required. If the commander decides there is a requirement, the minimum tasks designated for the NBC evaluation are listed in Table 2-3. NBC evaluations may be conducted as part of the commander's no-notice program, or along with the APART.

b. Post-mishap Flight Evaluation. This evaluation will be conducted after any class A or B accident and any class C accident at the discretion of the commander. The evaluation will be conducted according to paragraph 3-3 and paragraph 3-4. See AR 40-501 for medical release requirements prior to flight. After the evaluation, the IP will debrief the examinee and complete the appropriate IATF entries.

c. Medical Flight Evaluation. This evaluation is conducted according to AR 95- 1. The commander, on the recommendation of the flight surgeon, will require the examinee to perform a

series of tasks most affected by the examinee's disability. The evaluation should measure the examinee's potential to perform ATM tasks despite a disability. It should not be based on current proficiency. The flight surgeon may need to be part of the crew to assist in the completion of the evaluation.

d. No-notice Evaluation. This evaluation is conducted according to TC 1-210 and the unit's SOP. The commander will select the evaluation method: written, oral, and/or a flight. The evaluation may be conducted for an individual or a crew. After the evaluation, the evaluator will debrief the examinee or crew and complete the appropriate IATF entries.

e. Approved Flight Manual/Crew Manual Examination. This examination will consist of minimum 50 multiple choice, or True/False questions. Performance planning and weight & balance questions may require the completion of a TOLD Card or DD Form 365-4 (Weight and Balance Clearance Form F – Transport/Tactical). The aviator must answer 70% correctly to receive a passing grade.

Chapter 4

CREWMEMBER TASKS

This chapter describes essential tasks for maintaining crewmember skills. It defines the task title, number, conditions, and standards by which performance is measured. Descriptions of crew actions, along with training and evaluation requirements are provided. Chapter 6 outlines recommended crew callouts and crew duties. The task description is a training aid to assist crewmembers in successfully performing the tasks to standard.

4-1. TASK CONTENTS

a. Task Number. Base tasks are assigned 1000-series numbers, and mission tasks are assigned 2000-series numbers. Unit specific tasks are assigned 3000 series numbers.

b. Task Title. The task title identifies a clearly defined and measurable activity. Titles may be the same in several ATMs, but tasks may be written differently for the specific airframe.

c. Conditions. The conditions specify the common wartime or training conditions under which the task will be performed.

(1) A reference to the IP in the task conditions includes the SP. A reference to the FI in the task conditions includes the SI.

(2) When a UT, IP, or IE is cited in the condition, that individual will be at one set of the flight controls unless performing the tasks in a flight simulator. An IP, SP or IE may conduct training/evaluations from a non-crewmember station, if authorized by the commander.

(3) Unless otherwise specified in the conditions, all in-flight aircraft training and evaluations will be conducted under visual meteorological conditions (VMC). Simulated instrument meteorological conditions (IMC) denote flight solely by reference to flight instruments while the aviator is wearing a hood or other similar device that restricts outside visual references.

(4) If RL 1 training is conducted in a compatible flight simulator, an IP or IE is not required to be a crewmember to perform emergency procedures tasks. During an evaluation, the appropriate evaluator must be a crewmember in the simulator.

(5) Tasks requiring specialized equipment are not mandatory in aircraft that do not have the equipment installed (for example TCAS).

(6) If a high cockpit workload exists, essential cockpit procedures may be performed from memory. Crews will prioritize tasks and verify with the CL as time/crew workload permit. The crew will use the "challenge, response and response" method of reading the checklist. This is the most positive way to proceed through a checklist as it allows for crewmembers to remain aware of all checklist-related activities. Flexibility with this method is required. During periods of high cockpit workload (departure or takeoff, traffic pattern, descent and during approaches) the PNF may not be able to respond in a quick and positive manner. As a result, the benefits of the challenge and response do not justify the additional workload it places on the PF. Under these circumstances the checklist should still be read aloud; however, the PNF now also provides

the response. The PNF should only accomplish non-critical functions without acknowledgment. The operation of systems such as landing gear, flaps, autopilot, FMS and flight director mode selections require PF participation mandating a response such as "confirmed." For example, in the Landing Check, **"Landing Gear – Three Green/Confirm."** PF responds, **"Confirmed."**

d. Standards. The standards describe the minimum degree of proficiency or standard of performance to which the task must be accomplished. Individual instructor techniques will not be treated as standards nor used as grading elements. Standards are based on ideal conditions.

e. Description. The description explains one or more recommended techniques for accomplishing the task to meet the standards. This manual cannot address all situations and the alternate procedures that may be required. Tasks may be accomplished using other techniques, as long as the task is done safely and the standards are met. These actions apply in all modes of flight during day, night, or IMC. When specific crew actions are required, the task will be broken into crew actions and procedures as follows:

(1) Crew actions. These define the portions of a task performed by each crewmember to ensure safe, efficient, and effective task execution. The designations PF (pilot flying), and PNF (pilot not flying), do not refer to PC (pilot in command) duties. When required, PC responsibilities are specified. For all tasks, the following responsibilities apply:

(a) All crewmembers. Perform crew coordination actions, and announce malfunctions or emergency conditions. Monitor engine and systems operations, and avionics (navigation and communication) as necessary. During VMC, focus attention primarily outside the aircraft, maintain airspace surveillance, and clear the aircraft. Provide timely warning of traffic and obstacles by announcing the type of hazard, direction, and distance. Chapter 6 contains guidance on cockpit coordination.

(b) PC. The PC is responsible for the conduct of the mission, and for operating, securing, and servicing the aircraft he commands. The PC will ensure that a crew briefing is accomplished and that the mission is performed according to air traffic control (ATC) instructions, regulations, and SOP requirements.

(c) PI. The PI is responsible for completing tasks as assigned.

(d) Pilot Flying (PF). The PF is responsible for aircraft control and the proper execution of immediate action items contained within the emergency procedures. He will announce any deviation, and the reason, from instructions issued by ATC or the PNF.

(e) Pilot not flying (PNF). The PNF is responsible for navigation, in-flight computations, communication, and assisting the PF as requested.

(f) Trainer/evaluator. When acting as PNF during training and evaluations, the trainer/evaluator will act as a functioning crewmember and perform as required. This is true unless he is training or evaluating pilot response to an incapacitated or unresponsive crewmember.

(2) Procedures. This section consists of one or more recommended techniques for accomplishing the task. The procedures are an important element in standardization and training; however, they should not be construed to be the grading standard, rather as a means to meet the standard. There is enough flexibility to allow the PF to use judgment for minor

deviations as long as the standards are met. Crew callouts are in **bold** type when integrated in the task description.

f. Considerations. This section defines considerations for task accomplishment under various night and environmental conditions. Crewmembers must consider additional aspects to a task when performing it in different environmental conditions. The inclusion of environmental considerations in a task does not relieve the commander of the requirement for developing an environmental training program according to TC 1-210.

g. References. The references listed for each task are sources of information about that particular task.

4-2. TASKS

a. Standard versus Description. Aviators and trainers/evaluators are reminded that task descriptions contain required elements for successful completion of a given task. Conversely, descriptions are not to be used as a grading standard. It describes a method to achieve the standard, but has the flexibility to recognize different techniques and minor variations that will still allow the aviator to meet the standards. Attention to the use of the words, will, should, or may throughout the text of a task description is crucial. The word "will" in a task description is mandatory and will be evaluated as a task standard. The word recommended is used to encourage the use of a procedure, but is not mandatory.

b. Tasks requiring specific equipment do not apply to those units whose aircraft have no such equipment installed. (For example Task #1265 Perform traffic alert and collision avoidance system (TCAS) operations.)

TASK 1000

Participate in a crew mission briefing

CONDITIONS: Prior to flight, with all crewmembers present and given a DA Form 5484-R or unit designated briefing form IAW AR 95-1, and a unit approved crew mission briefing checklist.

STANDARDS:

PC.

1. Brief mission items detailed on DA Form 5484-R and a crew-briefing checklist.

2. Assign complete crewmember mission duties, cockpit duties and responsibilities.

Crewmembers. Verbally acknowledge a correct understanding of the mission briefing.

DESCRIPTION:

1. Although the PC has overall responsibility for the crew mission briefing, he may direct other crewmembers to perform parts of it. In performing this task, the briefer will brief the mandatory items from the DA Form 5484-R, the aircraft checklist and unit SOP. He ensures that the crew collectively understands the expected and potentially unexpected events from takeoff to tie-down. This covers all factors of the flight including the actions, duties and responsibilities of each crewmember.

2. At the end of the briefing, the other crewmembers will verbally acknowledge that they understand the assigned actions, duties and responsibilities for the entire mission.

NIGHT CONSIDERATIONS: N/A

REFERENCES:
AR 95-1
NGR 95-1
Local SOPs and Regulations
C-23 AFM/Crew manuals

TASK 1004

Plan a VFR flight

CONDITIONS: Prior to flight and given access to weather information; NOTAMs; flight planning aids; necessary charts, forms and publications; and weight and balance information.

STANDARDS:

1. Determine if the aircrew and aircraft are capable of completing the assigned mission.

2. Determine if the flight can be accomplished under Visual Flight Rules.

3. Check applicable publications and determine if there are any restrictions on departure, enroute, and at destination.

4. Select courses and altitudes that best ensure mission completion, and correctly compute magnetic headings within ±5 degrees

5. Determine distance ±1 nautical mile, ground speed ±5 knots, and ETE ±3 minutes for each leg of the flight.

6. Determine fuel requirements from takeoff to destination, plus fuel reserve, ±100 pounds.

7. Complete and file the flight plan.

8. Correctly perform crew coordination actions.

DESCRIPTION: Ascertain that the aircraft is capable of completing the mission. Using approved weather facilities; obtain information about departure, enroute, and destination weather. After ensuring that the flight can be completed under VFR, check NOTAMs for any restrictions applicable to the flight. Obtain charts that cover the entire flight area, and allow for changes in routing that may be required because of the weather and terrain. Select the courses and altitudes that will best facilitate mission accomplishment. Determine magnetic heading, ground speed, and ETE for each leg. Compute total distance and flight time, and calculate required fuel using the charts in the AFM/Crew manual. Ensure weight and balance forms kept in the aircraft logbook apply to aircraft load and CG limitations per AR 95-1. Verify that the aircraft weight and CG will remain within allowable limits for the entire flight. Complete the proper flight plan form, and file it with the appropriate agency.

NIGHT CONSIDERATIONS: Checkpoints used during the day may not be suitable for night use.

REFERENCES:
AR 95-1
C-23 AFM/Crew manuals
FM 1-240
NGR 95-1
NOTAMs
NGR 95-210
FAR/host country regulations
TC 1-204

Local SOPs and regulations
FM 1-230

TASK 1007

Plan an IFR flight

CONDITIONS: Prior to IFR flight and given access to weather information; NOTAMs; flight planning aids; necessary charts, forms, and publications; and weight and balance information.

STANDARDS:

1. Determine if the aircrew and aircraft are capable of completing the assigned mission.

2. Determine if the flight can be performed in accordance with all appropriate regulations.

3. Check applicable publications and determine if there are any restrictions on departure, enroute, and at destination.

4. Select routes that avoid severe weather hazards, conform to known preferred routing, and are within the capability of aircraft equipment. If off-airway, determine courses within ±5 degrees.

5. Select an altitude that avoids icing and turbulence, are above minimum altitudes, conform to semicircular rule, and do not exceed aircraft or equipment limitations.

6. Select an approach that is compatible with the weather, approach facilities, and aircraft equipment, and determine if an alternate airfield is required.

7. Determine distance ±1 nautical mile, true airspeed ±3 knots, ground speed ±5 knots, and ETE ±3 minutes for each leg of the flight.

8. Determine fuel required ±100 pounds.

9. Verify that the aircraft will remain within weight and CG limitations for the duration of the flight.

10. Complete and file the flight plan.

11. Correctly perform crew coordination actions.

DESCRIPTION: Ascertain that the aircraft is capable of completing the mission. Using approved weather facilities; obtain information about departure, enroute, destination, and alternate weather. Compare the destination forecast and approach minimums, and determine if an alternate airfield is required. Check NOTAMs for any restrictions applicable to the flight. Obtain charts that cover the entire flight area, and allow for changes in routing or destination that may be required because of the weather. Select the routes and altitudes that will best facilitate mission accomplishment. When possible, select preferred routing. Determine magnetic heading, ground speed, and ETE for each leg, including flight to the alternate airfield if required. Compute total distance and flight time, and calculate required fuel using the appropriate charts in the AFM/Crew manual. Ensure weight and balance forms kept in the logbook apply to aircraft load and CG limitations per AR 95-1. Verify that the aircraft weight and CG will remain within allowable limits for the entire flight. Complete the proper flight plan form, and file the flight plan with an appropriate agency. It is authorized to use computer-based flight planning aids. It is the responsibility of the PC to insure all of the data is accurate.

NIGHT CONSIDERATIONS. N/A

REFERENCES:
AR 95-1
NGR 95-1
NGR 95-210
TC 1-204
FM 1-230
FM 1-240
AFM/Crew manual
DOD FLIP
FAR/host country regulations
Local SOPs and regulations
NOTAMs

TASK 1014

Verify / Prepare Aircraft Weight and Balance

CONDITIONS: Given cargo weight and dimensions, crew weights, aircraft configuration, aircraft weight and balance information, AFM/Crew manual, and a blank copy of the appropriate DD Form 365-4 or electronic computer data sheet according to AR 95-1.

STANDARDS:

1. Verify that center of gravity (CG) and gross weight remain within aircraft limits for the duration of the flight. Complete DD Form 365-4 if applicable.

2. Identify all mission or flight limitations imposed by weight or CG.

DESCRIPTION:

1. Crew actions.

a. Select the completed DD Form 365-4 or electronic computer data sheet for the aircraft configuration load and mission. Verify that aircraft gross weight and CG will remain within the allowable limits for the entire flight. Note all gross weight, loading task/maneuver restrictions/limitations.

b. If there is no completed DD Form 365-4 or electronic computer data sheet that meets mission requirements, complete a new DD Form 365-4.

c. All crewmembers will be briefed on any limitations.

2. Procedures.

a. Identify the correct DD Form 365-4 for the configuration and fuel load.

b. Verify takeoff, enroute and landing CG are within limits.

c. Verify zero fuel, ramp, takeoff, and landing weights are within limits.

NOTE: Usually the Flight Engineer performs this task. The PC is responsible to ensure its accuracy.

NIGHT CONSIDERATIONS. N/A

REFERENCES:
AR 95-1
NGR 95-1
TM 55-1500-342-23
AFM/Crew manual

TASK 1022

Prepare a Takeoff and Landing Data (TOLD) Card

CONDITIONS: Given a completed DD Form 365-4, AFM/Crew manual, environmental conditions at takeoff, enroute, and landing; and a blank C-23 TOLD card.

STANDARDS:

1. Compute performance data according to procedures given in the AFM/Crew manual and the description below.

2. Correctly perform crew coordination actions.

DESCRIPTION: The aviator will determine, and have available aircraft performance data necessary to complete the mission. The TOLD card is used as an aid to organize this information and the format shown below shall be utilized. The front of the card lists computed power settings and airspeeds. The back of the TOLD card is used to determine maximum takeoff and landing weight, and is completed first as described below. Refer to the sample TOLD card to associate the example item numbers with referenced lines. The most accurate performance data can be obtained by using existing conditions, however, using the highest PA and temperature forecast during the mission is acceptable.

1. Max T/O WAT. Item (1) the climb limitation Maximum Takeoff **W**eight for Airfield **A**ltitude and **T**emperature is derived from the charts in Section 5, Sub-Section 5.3, of the AFM. Charts are provided for operation with and without RTOP, and for a flap setting of 10 or 15 degrees. Instructions for using the charts are found at the beginning of the sub-section. The weight obtained from the selected chart is entered on the designated line.

2. MAX T/O WT % OF CLIMB. Item (2) the Takeoff Climb gradient is derived from the charts in Section 5, Sub-Section 5.4, of the AFM. Charts are provided for operation with and without RTOP, and for a flap setting of 10 or 15 degrees. Instructions for using the charts are found at the beginning of the sub-section. Additionally the chart can be worked "backwards" when the known element is the climb gradient required, and the unknown is the weight limitation to meet that gradient. For example, if an airport has a climb requirement of 325 ft. per nautical mile, convert this to a % of gradient by dividing by 6076 (the number of feet in a nautical mile) and multiplying by 100.

$$(325/6076) \times 100 = 5.34\ \%\ \text{gradient}$$

Enter the chart at the ambient temperature and go up to the pressure altitude. Move right to the reference line. Follow the guideline up or down, as appropriate to intersect the gross climb gradient line. From the intersection of the two lines, move down to read the aircraft gross weight.

3. V_1 / V_R RATIO item (3) **(which means the split between decision to fly and rotation)** and **VALUE OF "D,"** item (4)**.** The V_1/V_r ratio and the Value of "D" are derived from the charts in Section 5, Sub-Section 5.5, of the AFM. Charts are provided for operation with and without RTOP, and for a flap setting of 10 or 15 degrees. Two complete sets of charts are provided. One set provides information for **T**ake**O**ff **D**istance **A**vailable (**TODA).** The other set provides information for **T**ake**O**ff **R**un **A**vailable (**TORA).** The first step is to use the **TODA** chart to determine the **VALUE OF "D."** If there is a published clearway, then you must

use the **TORA** chart to determine the **VALUE OF "D"** for runway length. The smaller of these two **VALUEs OF "D"** will be used to determine the max gross weight from the runway. Instructions for using the charts are found at the beginning of the sub-section. The values obtained from the charts are entered on the designated line.

4. MAX T/O WT FOR VALUE "D" item (5) the maximum Takeoff weight for the value of "D" are derived from the charts in section 5 sub-section 5.5 of the airplane flight manual. Charts are provided for operation with and without RTOP, and for flap setting of 10 or 15 degrees. Instructions for using the charts are found at the beginning of the sub-section. The value obtained from the chart is placed on the adjacent line.

5. MAX LANDING WEIGHT WAT Item (6) the maximum landing Weight for Altitude and Temperature shall be calculated for the arrival airfield. The departure weight must be adjusted accordingly so as to arrive at the destination at or below this weight. This value is derived from the chart in Section 5, sub-section 5.9, Landing WAT. Instructions for using the charts are found at the beginning of the sub-section. The value obtained from the chart is placed on the adjacent line.

6. The Single Engine Drift Down charts (Item 7) in chapter 6, tables 55–60 of the Crew Manual will be consulted and takeoff weight adjusted accordingly when flying routes with terrain that is above the maximum single engine stabilizing altitude. If this is an issue, takeoff weight cannot exceed this weight plus fuel required to get to the critical point on the route.

7. The lowest value of items 1,2,5 and 6 is placed at item (8) **MOST RESTRICTIVE WT.** The actual take off weight of the aircraft must be less than this weight.

8. The front of the card is completed utilizing the C-23 checklist, pages tabbed "Performance" or the Crew Manual and AFM.

9. The PC will insure that aircraft limitations are not exceeded.

NOTE 1: The same TOLD card will suffice for consecutive takeoffs and landings when aircraft gross weight or environmental conditions have not increased significantly; that is, 1000 pounds gross weight, 6 degrees C, or 1000 feet PA.

NOTE 2: The Military TOLD is completed in the same manner as described above. As a minimum, the items listed on the back of the Military TOLD card must be completed. Follow the instructions in the Military Supplement in the Flight Manual for detailed information. Military performance charts may be used at the discretion of the PC for day, VFR departures. The PC will ensure obstacles beyond the departure runway can be cleared with one engine inoperative. When using the military charts at other times the commander must consider the risk factors involved operating the airplane with reduced single-engine climb capability and reduced visibility.

REFERENCES:
AR 95-1
NGR 95-1
FM 1-203
AFM/Crew manual

TOLD Card

_____ PA	_____ Temp	_____ Weight		
MTOP 70 KIAS _____	Speeds	Flaps 10°	Flaps 15°	
RTOP 110 KIAS _____	V_1	_____	_____	
MCP _____	V_R	_____	_____	
Vref **35°** **15°** **0°**	V_2	_____	_____	
_____ _____ _____	V_2+15	_____	_____	
MTOP 110 KIAS _____	V_{YSE}	_____	_____	
C-23 TOLD Nov 2003	V_Y	_____	_____	

Takeoff and Landing Data
Max Weight Worksheet
Temp_____ Wind_____
PA_____ Slope_____
ASDA_____ TORA_____
TODA_____
Climb Gradient Req_____
Max T/O Wt WAT ___(1)___
Max T/O Wt % climb___(2)___
V1/Vr Ratio ___(3)___
Value of "D" ___(4)___
Max T/O Wt for "D" ___(5)___
Max Landing WAT ___(6)___
S.E. Drift down ___(7)___
Most Restrictive Weight
_____(8)_____

_____ PA	_____ Temp	_____ Weight	
RTOP STATIC _____	Speeds	Flaps 15°	
MCP _____	V_{CRIT}	_____	**1V_{FR}** 15-10°
	V_R	_____	**2V_{FR}** 15-10°
Vref **DST** **ROLL**	**2V_{CO}**	_____	
_____ _____	**1V_{CO}**	_____	**2V_{FR}** 10-0°
MTOP 110 KIAS _____	V_{YSE}	_____	
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Takeoff and Landing Data
Max Weight Worksheet
Temp_____ Wind_____
PA_____ Slope_____
ASDA_____ TORA_____
TODA_____
Climb Gradient Req_____
Max T/O Wt WAT ___(1)___
Max T/O Wt % climb___(2)___
V1/Vr Ratio ___(3)___
Value of "C" ___(4)___
Max T/O Wt for "C" ___(5)___
Max Landing WAT ___(6)___
S.E. Drift down ___(7)___
Most Restrictive Weight
_____(8)_____

TASK 1023

Perform flight at minimum control speed with critical engine inoperative

CONDITIONS: In a C-23 simulator.

STANDARDS:

1. Properly configure the aircraft in a takeoff or landing configuration.
2. Maintain takeoff power (or maximum allowable) on the operating engine.
3. Maintain heading ±10 degrees until V_{mc}.
4. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. The PF's main focus will be outside the aircraft. The IP will assign a safe altitude to start the maneuver, keep his area of observation cleared, and perform PNF actions requested by the PF.

Procedures. The PF will perform the following actions:

Configure the aircraft for the maneuver in either takeoff or landing configuration. Clear the area while reducing airspeed to 100 KIAS. Set zero thrust on left engine, set RTOP on the right engine. Reduce airspeed at a rate not to exceed 1 knot per second by gradually increasing pitch attitude. Maintain heading as airspeed dissipates by using proper rudder, aileron and elevator coordination. At V_{mc}, full rudder deflection will be required to maintain heading. Note airspeed and then increase pitch attitude slightly to demonstrate loss of directional control that occurs with a decrease in airspeed. Regain heading control immediately by reducing power on the operative engine and decreasing pitch attitude. During this maneuver, rapid rolling tendencies may develop if airspeed reduction is abrupt or the maneuver is performed at a height at which the aircraft stalls before or at V_{mc}. In this event, immediate reduction of power and pitch attitude (angle of attack) is required to effect prompt recovery. Complete the maneuver by reducing pitch attitude to increase airspeed, and then configure the aircraft for normal flight with both engines operating.

NOTE 1: The increase in V_{mc} speed should be demonstrated and practiced during qualification/refresher training or as deemed necessary by the IP. This increase in V_{mc} speed is caused by wind milling of the inoperative propeller.

NOTE 2: This maneuver is to be trained for familiarization purposes in a compatible simulator only.

NIGHT CONSIDERATIONS: The maneuver should be practiced while heading into a visible horizon. Crosscheck altitude closely, especially when the horizon is partially obscured by haze or smoke.

REFERENCES:
AFM/Crew manual.
FM 1-203

TASK 1029

Perform preflight inspection.

CONDITIONS: Given a C-23 and the Operator's Checklist.

STANDARDS:

Rated

1. Ensure the preflight inspection has been completed according to the CL.

2. Correctly enter appropriate information on DA Form 2408-12 (Army Aviator's Flight Record) and DA Form 2408-13 (Aircraft Inspection and Maintenance Record).

3. Correctly perform crew coordination actions.

Nonrated

1. Complete Prior to External Checks and External Checks according to the CL, as directed by the PC.

2. Correctly enter appropriate information on DA Form 2408-12 (Army Aviator's Flight Record) and DA Form 2408-13 (Aircraft Inspection and Maintenance Record).

3. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. The FE will ensure that the aircraft is properly serviced, special equipment is installed, entries in the aircraft logbook are current and correct, and covers and tie-downs are removed. He will secure all loaded cargo as necessary.

Procedures. The FE will brief the PC of the aircraft status, to include any special-mission equipment installed and any known deficiencies. The PC will verify all preflight checks were accomplished IAW the checklist. The FE will answer any questions, from the PC, concerning the preflight or aircraft components or systems based on data in the aircraft logbook. The FE will request maintenance assistance if required. Crewmembers will enter appropriate information on DA Forms 2408-12 and 2408-13. The FE will ensure cowlings and equipment are secure after the completion of the preflight inspection.

NOTE: The AFM/Crew manual contains details about procedures outlined in the Checklist.

NIGHT CONSIDERATIONS: If time permits, accomplish the preflight inspection during daylight hours. During the hours of darkness, use a flashlight with an unfiltered lens to supplement available lighting. Hydraulic leaks, oil leaks, and other defects are difficult to see using a flashlight with a colored lens. TC 1-204 contains details about preflight inspection at night.

COLD WEATHER CONSIDERATIONS: Brakes and tire-to-ground contact should be checked to ensure they are not frozen in place and will rotate freely. In addition to the normal preflight exterior inspection, special attention should be given to all vents, openings, control surfaces, hinge points and wing, tail and fuselage surfaces for accumulation of ice or snow. Removal of ice, snow and frost accumulation is required before takeoff. The wing contour may be sufficiently altered by the ice and snow to cause its lift qualities to be seriously impaired,

result in the loss of lift, and cause adverse stall characteristics. Propeller blades and hubs will be inspected for ice and snow. The engine inlets must be checked visually to ensure they are free of any debris. Remove snow, frost and ice accumulations in accordance with the crew manual.

DESERT AND HOT WEATHER CONSIDERATIONS: Check that the landing gear struts are free of sand and grit and that the aircraft interior is free of an accumulation of sand and dust.

REFERENCES:
AR 95-1
NGR 95-1
DA Pamphlet 738-751
TC 1-204
AFM/Crew manual
Aircraft logbook

TASK 1035

Perform engine-start.

CONDITIONS: In a C-23 with the Operator's Checklist.

STANDARDS:

Rated

1. Perform procedures and checks according to the Operator's Checklist.
2. Ensure that engines and systems are operating within prescribed tolerances.
3. Correctly perform crew coordination actions.

Nonrated

1. Respond to all applicable checklist items when read by the right seat pilot.
2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. Each crewmember will complete the required checks or procedures pertaining to his crew duties according to the checklist and the preflight briefing.

Procedures. The pilot seated in the left seat will start the engines according to the Operator's Checklist, and accomplish aircraft system checks in the appropriate sequence. The right seat pilot will start the clock when the pilot in the left seat selects the start switch to start and monitor the start sequence and ensure adherence to time limitations. The left seat pilot will monitor engine indications during the start ensuring limitations are not exceeded and be prepared to abort the start at any time. The FE will assume a position in front of the aircraft to ensure that the aircraft is clear and ready for engine start. If environmental or cargo considerations require the FE to be in the cabin during start, he will be in a position to view the engine being started. The FE will be able to communicate via intercom unless an intercom cord is not available. If an intercom cord is not available the FE will respond with appropriate hand signals when starting the aircraft. The FE will verify the proper operation of systems inside and outside the aircraft and respond quickly and accurately to those checklist items requiring an oral response. The FE will ensure passengers, mission equipment and cargo is secured and ready for taxi and takeoff.

NIGHT CONSIDERATIONS: Before starting the engines, ensure that all internal and external lights are operational and properly set. Lighting levels must be high enough so the crew can easily see the instruments and the aviator can start the engines without exceeding operating limitations. Beacon lights will be turned on prior to starting the engines and remain on during engines operation except during conditions that may cause vertigo or other hazards to safety.

COLD WEATHER CONSIDERATIONS:

1. Before starting engines: Check all controls for full travel and freedom of movement.

2. Starting engines. When starting engines on ramps covered with ice, all crewmembers must monitor the aircraft to ensure it does not slide.

DESERT AND HOT WEATHER CONSIDERATIONS: Use normal starting procedures. Be aware that higher-than-normal engine temperatures may be expected, and be prepared to abort the start before temperature limitations are exceeded. Blowing sand and debris may require the use of the ice vanes.

REFERENCES:
AR 95-1
NGR 95-1
C-23 Flight Manual
Operator's Checklist
Unit SOP
FAA-P-8740-24 Tips on Winter Flying

TASK 1040

Perform aircraft taxi.

CONDITIONS: In a C-23 with after-start check completed and aircraft cleared.

STANDARDS:

Rated

1. Correctly perform procedures and checks according to the checklist.

2. Use proper power and brakes as necessary to maintain safe taxi speed

3. Remain within approved taxi area.

4. Correctly perform crew coordination actions.

Nonrated

1. Perform applicable taxi and pre-takeoff checks per the AFM, Crew Manual, Checklist, and unit SOP.

2. Respond to applicable checklist items accurately and in a timely manner.

3. Perform aircraft taxiing duties inside the aircraft per the AFM, Crew Manual, aircraft checklist, and unit SOP.

4. Use proper hand and arm signals while, performing taxi director duties outside the aircraft.

5. Assist the pilot with maintaining wheel and wingtip clearance.

DESCRIPTION:

Crew Actions. Each crewmember will complete the required checks or procedures pertaining to his crew duties according to the checklist and the preflight briefing.

Procedures The PF, assisted by the PNF and FE, will perform the following actions:

1. Remain within approved taxi areas. Maintain a safe taxi speed compatible with airfield conditions and other obstacles. Use proper power and, if necessary, brakes to control taxi speed. Comply with all taxi clearances. Center nose wheel and maintain proper power settings when aircraft is stopped. Check for proper operation of aircraft systems. Respond to checklist items using the oral confirmation method.

2. The PNF should read the checklist and help the PF clear the area. He should complete all designated PNF checks and assist the PF as required.

3. The FE assists in checking proper operation of aircraft systems and responds to checklist and SOP items by using the oral confirmation method. When performing taxi director duties outside the aircraft the FE will position himself where the aviators can see him clearly per the AFM, Crew Manual and unit SOP. The FE will divide his attention as necessary between the aircraft and obstacles that may present a hazard. The FE will use hand and arm signals as described in FM 21-60.

NOTE: For reverse taxiing use of outside marshaling is required in order to keep the area around the aircraft clear. (CAUTION: Power levers must be in ground fine prior to braking.)

NIGHT CONSIDERATIONS: Due to restricted visibility at night, taxi speeds should be reduced to allow for a greater margin of safety. Outside guidance should be requested whenever taxiing in areas where obstacles are difficult to see. Avoid shining the taxi/landing light into other aircraft cockpits or the ground guide's eyes.

COLD WEATHER CONSIDERATIONS: Whenever possible, avoid taxiing in deep snow, lightweight dry snow, or slush. Under these conditions, more power is required, steering is more difficult, and snow and slush will be forced into the brake assemblies. Chocks or sandbags may be used to prevent the aircraft from rolling. Because spotty ice cover is difficult to see, taxi speeds should be slow and more clearance should be allowed while maneuvering the aircraft.

DESERT AND HOT WEATHER CONSIDERATIONS:

Warm up and ground operations. Monitor oil temperatures in feather or ground fine. Set power levers to flight idle and props taxi to maintain oil temperature within limits.

Taxiing. When practical, avoid taxiing over sandy terrain to minimize propeller erosion and engine deterioration. Blowing sand and debris may require the use of the ice vanes. Use minimum braking to prevent brake overheating.

REFERENCES:
AFM/Crew manual
Operator's Checklist
Local SOP
AR 95-1
NGR 95-1
TC 1-204
FM 1-302
FM 21-60
TC 1-201
FAA-P-8740-24 Tips on Winter Flying

TASK 1045

Perform engine run-up.

CONDITIONS: In a C-23 or simulator with access to the checklist.

STANDARDS:

1. Perform procedures and checks according to the checklist.
2. Ensure that engines and systems are operating within prescribed tolerances.

DESCRIPTION:

Crew Actions. Each crewmember will complete the required checks or procedures pertaining to his crew duties according to the checklist and the preflight briefing.

Procedure. The PF should position the aircraft into the wind, within 45 degrees. Ensure the nose wheel is centered. The crew will complete the aircraft runup checks, as applicable, and ensure that systems and equipment are operating properly. Use the checklist to verify that all checks are completed. Record appropriate information on applicable aircraft logbook forms. The right seat pilot should read the checklist, complete all designated aircraft systems and mission equipment checks, and assist the left seat pilot as required. The right seat pilot and FE should ensure that the aircraft does not move during the checks while the left seat pilot's attention is diverted to items inside the cockpit.

NIGHT CONSIDERATIONS: Lighting levels must be high enough so the crew can easily see the instruments and perform engine checks without exceeding engine limitations. Ensure there is enough ambient light, or aircraft lighting to be able to monitor aircraft movement.

REFERENCES:
AFM/Crew manual
Operator's Checklist
Unit SOP

TASK 1057

Perform or describe emergency egress.

CONDITIONS: In a C-23.

STANDARDS: Simulate performing or describing the appropriate emergency exit procedure from the cabin or cockpit.

Rated

1. Brief FE, if time allows, on the nature of the emergency, and special instructions or considerations. Include type of landing such as land or water, on or off airport, and time before touchdown.

2. Notify ATC as required.

3. When aircraft stops, shut down aircraft IAW C-23 emergency checklist. (Note: If off airport landing, manually activate ELT.)

4. Notify FE when emergency egress is to begin by announcing, "evacuate" three times.

5. Assist FE with egress and exit the aircraft. Account for all occupants.

Nonrated

1. Based on time available, brief passengers for landing and egress. Secure loose objects.

2. After landing, begin passenger egress when directed by pilots. Choose exits considering passenger access, fire, debris, trees or snow, aircraft attitude and damage. When ditching consider if opening the exit will flood the cabin.

3. Time permitting, gather usable equipment from aircraft before leaving, for example: First aid kits, fire extinguishers, flashlights, survival kits, survival radios.

DESCRIPTION: After the aircraft has come to a complete stop perform or describe how to exit the aircraft through the nearest emergency exit. If sitting in the cabin, exit through one of the four emergency exit doors. When using the two forward emergency exit doors, exit in a 45° heading forward, avoiding the propeller disc area. If seated in the cockpit, exit the aircraft through one of the emergency doors or through the emergency exit hatch. After exiting the aircraft, proceed to the rendezvous point as briefed.

REFERENCE:
AFM/Crew manual
C-23 Checklist

TASK 1058

Perform or describe aircraft refueling.

CONDITIONS: Given a C-23 airplane.

STANDARDS:

1. Ensure fueling and safety procedures are completed with per FM 10-67-1, the AFM / Crew Manual and unit SOP.

2. Properly enter appropriate information on DA Form 2408-12.

DESCRIPTION: Guide the fueling vehicle to the aircraft, and ensure the driver parks the vehicle the proper distance from the aircraft. Verify that all personnel who are not involved with the fueling operation are a safe distance away. Ensure the aircraft is grounded per FM 10-67-1, and refuel the aircraft per FM 10-67-1, AFM/Crew Manual, and unit SOP. Ensure all tanks are filled to the required level. When the refueling is completed, ensure all caps are secured and remove the grounding connection. Inform the PC when refueling is completed. Assist in clearing the aircraft during the departure from the refueling area as necessary. Make appropriate entries on DA Form 2408-12.

REFERENCES:
AR 95-1
NGR 95-1
DA Pamphlet 738-751
FM 1-500
FM 10-67-1
FM 21-60
Unit SOP
AFM/Crew manual

TASK 1059

Perform or describe aircraft security check.

CONDITIONS: Given a C-23 airplane.

STANDARDS: Secure the aircraft after the last flight of the day per AFM and Crew Manual.

DESCRIPTION: PC will ensure the aircraft is properly moored and protective covers and security devices are properly installed per AFM/Crew Manual. Perform any additional security duties outlined in the unit SOP.

REFERENCE:
AR 190-51
FM 1-500
AFM/Crew manual
Unit SOP

TASK 1060

Perform ramp door operation.

CONDITIONS: Given a C-23 airplane.

STANDARDS:

1. Correctly perform ramp door operation by the description.

2. Correctly configure the aircraft as prescribed by the AFM and Crew Manual.

3. Operate the ramp door per the AFM and Crew Manual.

4. Install the steady jacks as required by the Crew Manual for ground operations.

DESCRIPTION:

1. When operating the door outward on the ground, with the ramp door externally unlocked, open and close the ramp door by using the hydraulic actuators. Ensure the ramp door is locked externally when closed. When operating the ramp door inward during ground operations, internally unlock the ramp door and open and close the door by using the reversible electrical motor. Ensure the ramp door is internally locked when closed.

2. When operating the ramp door in flight refer to Task 2001, Paradrop Operations.

CAUTION:

Ensure there are no obstructions in the door path of operation.

REFERENCE:
AR 95-1
NGR 95-1
AR 95-27
FM 1-203
FM 1-302
FM 55-15
FM 55-450-2
TC 1-201
TM 55-1500-342-23
AFM/Crew manual
Unit SOP

TASK 1061

Perform or describe internal load operations.

CONDITIONS: In a C-23 airplane; aircraft loaded with cargo/passengers.

STANDARDS:

1. Ensure a thorough passenger briefing is conducted.
2. Ensure aircraft weight limitations are not exceeded.
3. Ensure aircraft will remain within CG limitations.
4. Ensure passengers and cargo are properly secured
5. Ensure floor-loading limitations are not exceeded.
6. Correctly perform crew coordination actions.

DESCRIPTION: Formulate a loading plan, and compute aircraft weight and balance. Complete a DD Form 365-4 if required. Ensure proper cargo loading and tie-down procedures are used. Ensure passengers receive a briefing and are seated and wearing seat belts.

NOTE: If the aircraft is not shut down for loading, a passenger briefing may be difficult. Passengers should be briefed before boarding or passenger briefing cards used per local directives or the unit SOP.

REFERENCES:
AR 95-1
NGR 95-1
FM 1-203
FM 55-450-2
TC 1-201
AFM/Crew Manual
Unit SOP

TASK 1095

Operate aircraft survivability equipment.

CONDITIONS: In a C-23 equipped with ASE or orally.

STANDARDS:

Rated.

1. Describe the purpose of each installed item of ASE.

2. Perform/describe preflight inspection, turn-on, test, operation, and shut down of installed ASE.

3. Correctly employ/describe use of installed ASE.

Nonrated. Correctly prepare equipment for operation.

DESCRIPTION:

Perform or describe preflight inspection, turn-on, test, operation, and shutdown of installed ASE equipment. Evaluate and interpret the ASE visual and aural indications.

Properly execute mission employment doctrine and determine partial failure alternatives.

REFERENCES:
FM 1.101
ASE Operators Manuals
UNIT SOP
AFM/Crew Manual

TASK 1104

Perform normal takeoff and climb.

CONDITIONS: In a C-23 with Taxi & Pre-takeoff and Runway Checks completed and aircraft cleared for takeoff.

STANDARDS:

Rated

1. Place ailerons into wind and hold foreword pressure on control yoke on takeoff roll.

2. Set scheduled Takeoff Power by 70 KIAS

3. Maintain runway centerline between the main landing gear during the takeoff roll.

4. Rotate smoothly to proper attitude at computed V_r speed.

5. Maintain scheduled climb speed until minimum single-engine maneuvering altitude (minimum of 500 ft is attained). (+5, -0 KIAS not to exceed 20° pitch attitude)

6. Do not exceed any limitations prescribed by the AFM/Crew Manual.

7. Correctly perform crew coordination actions.

Nonrated

1. Respond correctly to appropriate checklist items.

2. Correctly perform crew coordination actions.

3. Ensure passengers and cargo remains secure.

DESCRIPTION:

Crew Actions

1. The PF will bug V_2 on their airspeed indicator.

2. The PF's main focus will be outside the aircraft during the maneuver, having primary control of the power levers to be prepared to abort the takeoff.

3. The right seat pilot will set scheduled power and verify the Autofeather and RTOP (if required) is armed and scheduled engine power is achieved without exceeding engine limitations

4. The PNF will bug V_1 on their airspeed indicator.

5. The PNF, throughout the takeoff roll, will monitor engine instruments, CWPs and acceleration and call for an aborted takeoff if aircraft performance is not satisfactory.

6. Prior to V_1, any crewmember may announce, **"Abort, Abort, Abort"** if they notice any abnormalities.

Procedures. Complete the Taxi & Pre-takeoff Checks and position flaps to the desired setting. The takeoff flap setting may be either 10° or 15° as appropriate for conditions. Runway Checks will be called for when cleared to taxi onto the runway. Align the aircraft with the runway centerline and complete the Runway Checks. A rolling takeoff is the preferred method, except when runway length is critical and requires MTOP torque to be set within 10 seconds of

advancing the power levers, and before 70 KIAS. For maximum performance when runway length is critical, the PF will hold the brakes until MTOP has been set. The PF will select Flight Idle and call for **"Props and Fuel."** The PNF will set and confirm **"Props - Max, Fuel – Flight."** The PF will set the power levers to a minimum of 2000 ft/lbs. of torque and call **"Set MTOP,"** while continuing to keep his/her hand on the power levers. The PNF will smoothly set MTOP and hold forward pressure to the control yoke and aileron into the wind. PF will maintain desired track using the steering tiller, until the rudders become effective. Then move their hand from the steering tiller to the control yoke, holding foreword pressure and aileron into the wind, and announce **"My controls."** The PNF will visually confirm this, release the flight controls and state **"Your controls."** At 70 KIAS the PNF will announce **"70 Knots."** The PNF will announce **"V_1"** as aircraft passes computed V_1 speed. At this point the PF will remove their hand from the power levers to the control yoke. At V_r the PNF will announce, **"rotate."** The PF will then initially rotate the aircraft (with both hands) to 10° degrees pitch attitude and there after adjust to maintain V_2+15, not to exceed 20° pitch attitude. The PNF will call **"Positive Rate"** when a positive rate of climb is achieved. The PF will apply pressure to the brakes, and then release them, and call for **"gear-up"**. At this point the PNF will position the gear handle to the up position and ensure the landing gear has satisfactorily retracted. The aircraft will be flown at V_2+15 knots until passing safe single engine maneuvering altitude or 500 feet whichever is greater, before accelerating to the cruise-climb speed. The FE will visually check both engines and cargo compartment and maintain airspace surveillance. When a flaps 15° takeoff is made, the PF will call for **"flaps - 10°"** when passing 120 KIAS. Passing 125 KIAS the PF will call for **"flaps-up."** Passing 130 KIAS the PF will call for **"climb power, After-Takeoff Checks."** The PNF will, if ambient conditions allow, set climb power to 3625lbs with a maximum ITT of 770°C (which ever is reached first). The PNF will complete the After Take Off checks when practical. After the After Takeoff Checks have been completed, the PF will assume and maintain control of the power levers for the remainder of the flight. This does not preclude the PF from requesting that the PNF adjust and set power as needed during high workload situations. (i.e. during steep turns, or when hand flying an instrument approach in turbulence, etc).

NOTE 1: No turns will be executed below 500 feet AGL except for obstacle avoidance.

NOTE 2: Where noise abatement procedures are required, airspeed should be maintained at V_2 + 15 knots until 1500 feet AGL, before accelerating and retracting flaps.

NOTE 3: Single Engine Maneuvering Altitude is an altitude (not less than 500 feet AGL) at which the aircraft can safely clear all obstacles around the airfield while maneuvering for landing when operating on a single engine. If that altitude is unknown, use circling minimums.

NOTE 4: When operating in conditions which arming the Reserve Takeoff Power System is not authorized by operating limitations or is inoperative, the With RTOP performance charts may be used by referring to the supplement section of the Flight Manual titled Limitations, Procedures and Information Associated with takeoff Using Manual Power Setting for RTOP. (The manually setting of RTOP procedure, referring to the aforementioned supplement, may be used anytime at the PC's discretion).

NOTE 5: "70 knots" is defined as: Scheduled torque is set within appropriate time, ITT within limits, Auto-feather armed, RTOP is armed (if applicable), Ng within limits, Prop RPM within limits, oil pressure and temp within limits, and CWPs out.

NOTE 6: An aborted takeoff will be initiated by the PF in response to an abort call from anyone in the crew. For this reason, the PF must keep his/her hand on the power levers until V_1, while allowing the PNF to make the required power adjustments during the takeoff roll.

NOTE 7: For takeoffs from the copilots seat (right seat), the following differences apply: The PNF (left seat) will bug V_1 and the right seat will bug V_2. The left seat will align the aircraft with the runway centerline, select flight idle, and complete runway checks. The left seat will announce **"Your controls"**, and the right seat will hold the control column and place his feet on the rudder pedals and brakes and announce **"My Controls"**. The right seat when cleared for takeoff, will call for **"Props and Fuel"**. The right seat will set the controls and announce **"Props - Max, Fuel - Flight"**. While the left seat is initially maintaining aircraft alignment with the runway by using the steering tiller, the right seat will begin to advance the power levers and call **"Set MTOP"** and adjust the torque to the desired takeoff power setting. As soon as the rudders are effective, the right seat will announce **"My rudders"**, and the left seat will release the steering tiller. Thereafter, the takeoff will be accomplished as above with the roles reversed.

NOTE 8: On slush or snow covered runways the aircraft nose should be raised after attaining 60 KIAS. The nosewheel should be kept just clear of the contamination during acceleration to V_r.

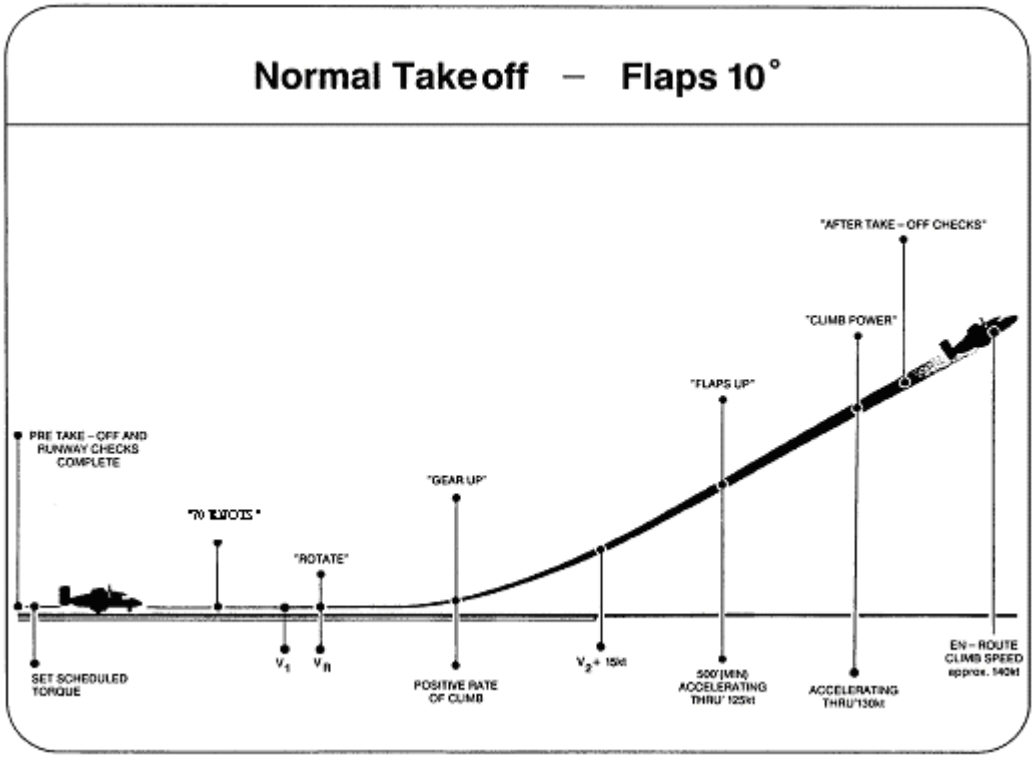
NIGHT CONSIDERATIONS: Adjust cockpit lights as necessary and ensure a serviceable flashlight is readily accessible. Landing and taxi lights may be left off during takeoffs from runways where dust, smoke, or haze may be encountered. Reduced visual references will make it difficult to maintain the desired ground track. Knowing the surface wind conditions will assist in determining the approximate crab angle into the wind during the climb. Be prepared to transition to instrument flight if visual references are too few or experiencing any symptoms of spatial disorientation.

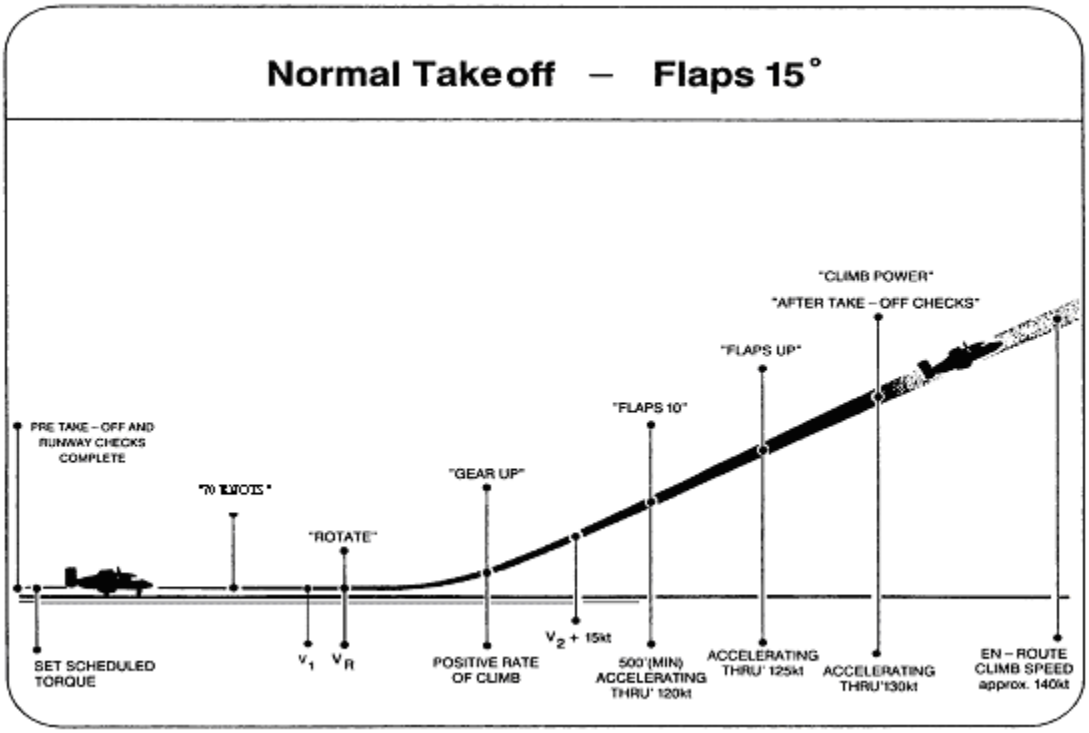
COLD WEATHER CONSIDERATIONS: If the possibility of any ice, snow, or frost accumulation on the flying surfaces exists, do not attempt a takeoff. Activate all anti-ice and deice systems allowing sufficient time for the equipment to become effective. Accumulations of snow, slush, or water will increase takeoff distances. After a takeoff from a runway covered with snow, slush, or water, delay gear retraction and then cycle the landing gear to dislodge any ice accumulation. When aircraft icing is likely, climb at higher than normal airspeed. Stall speeds may be higher than normal and the stall warning horn may be unreliable.

DESERT AND HOT WEATHER CONSIDERATIONS: Use normal takeoff procedures. Avoid taking off in the wake of another aircraft if the runway is sandy or dusty.

MOUNTAIN CONSIDERATIONS: Use normal takeoff procedures. Takeoff and climb performance will be reduced due to density altitude.

REFERENCES:
AR 95-1
NGR 95-1
AFM/Crew manual
TC 1-204


Normal Takeoff – Flaps 10°
"AFTER TAKE – OFF CHECKS"
"CLIMB POWER"
"FLAPS UP"
PRE TAKE – OFF AND RUNWAY CHECKS COMPLETE
"GEAR UP"
"ROTATE"
SET SCHEDULED TORQUE
V_1
V_R
POSITIVE RATE OF CLIMB
V_2 + 15kt
500'(MIN) ACCELERATING THRU' 125kt
ACCELERATING THRU'130kt
EN – ROUTE CLIMB SPEED approx. 140kt


Normal Takeoff – Flaps 15°
"CLIMB POWER"
"AFTER TAKE – OFF CHECKS"
"FLAPS UP"
"FLAPS 10"
PRE TAKE – OFF AND RUNWAY CHECKS COMPLETE
"GEAR UP"
"ROTATE"
SET SCHEDULED TORQUE
V_1
V_R
POSITIVE RATE OF CLIMB
V_2 + 15kt
500'(MIN) ACCELERATING THRU' 120kt
ACCELERATING THRU' 125kt
ACCELERATING THRU'130kt
EN – ROUTE CLIMB SPEED approx. 140kt

TASK 1105

Perform military takeoff and climb.

CONDITIONS: In a C-23 with Taxi & Pre-takeoff and Runway Checks completed.

STANDARDS:

Rated

1. Utilize maximum runway length for takeoff.

2. Place ailerons into wind and hold foreword pressure on control yoke on takeoff roll.

3. Set scheduled Takeoff Power prior to brake release.

4. Maintain runway centerline between the main landing gear during takeoff roll.

5. Rotate smoothly to proper attitude at computed V_r speed, not exceeding 20° pitch attitude. Accelerate to maintain $2V_{co}$ (+5, -0 KIAS)

6. Maintain $2V_{co}$ (+5, -0 KIAS) until clear of obstacles or single-engine maneuvering altitude (not less than 500 ft. AGL) is attained. If no obstacles exist within the takeoff flight path, the climb procedure will be the same as for a normal takeoff.

7. Do not exceed any limitations prescribed by the AFM/Crew Manual.

8. Correctly perform crew coordination actions.

Nonrated

1. Aid pilot in maneuvering aircraft during lineup for departure by calling out main wheel distances to maintain 3 to 5 feet from the end of runway.

2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions

1. The PF will bug $1V_{co}$ on their airspeed indicator.

2. The PF's main focus will be outside the aircraft during the maneuver and be prepared to abort the takeoff.

3. The right seat pilot will set scheduled power and verify the Autofeather is armed and scheduled engine power is achieved without exceeding engine limitations before brake release.

4. The PNF will bug V_{crit} on their airspeed indicator.

5. The PNF, throughout the takeoff roll, will monitor engine instruments, CWPs and acceleration and call for an aborted takeoff if aircraft performance is not satisfactory.

Procedures: Complete the Taxi & Pre-takeoff Checks and position flaps to 15°. Runway Checks will be called for when cleared to taxi onto the runway. The PF will position the aircraft on the runway centerline with the aid of the FE so maximum runway length is available for takeoff. The PF will set Flight Idle and call for **"Props and Fuel."** The PNF will set the controls and respond with **"Props-Max, Fuel-Flight."** The PF will set the power levers to a minimum 2000 ft/lbs of torque and call **"Set RTOP."** The PNF will smoothly set RTOP prior to

brake release. PF will maintain desired track by use of the steering tiller. When the rudders become effective, the PF will move his left hand from the steering tiller to the flight controls and announce **"My controls,"** and hold ailerons into the wind and foreword pressure on the yoke. The PNF will visually confirm this and release the flight controls and announce **"Your controls."** At 70 knots the PNF will announce, **"70 knots."** The PNF will announce **"V_{Crit}"** as aircraft passes V_{Crit}. The PF will remove their hand from the power levers and hold the control yoke with both hands. At computed rotation speed (Vr), the PNF will announce, **"rotate."** The PF will rotate the aircraft (with both hands) to smoothly achieve the computed climb speed ($2V_{CO}$),maximum pitch attitude of 20°. The PNF will call **"Positive Rate"** when a positive rate of climb is achieved. The PF will apply and release the brakes and call **"Gear-Up."** At this point the PNF will position the gear handle to the up position. The aircraft should be allowed to pass through the 50 feet height at $2V_{CO}$. If critical obstacles exist within the two engines operating net flight path, the initial takeoff and climb should be continued at $2V_{CO}$ until the obstacle is cleared (not less than 500 ft. AGL.) At this height or above, airspeed should be increased and flap retraction from 15° to 10° completed at the computed flap retraction speeds. Continue the climb with RTOP set and flaps 10° at the speed found in the Military Supplement 2 until a minimum of 1500 feet is achieved. Thereafter, normal enroute operations will be utilized. If no obstacles exist within the takeoff flight path, the climb and flap retraction procedures will be the same as for Task 1104 (Normal Takeoff). The FE will visually check both engines and cargo compartment and maintain airspace surveillance.

NOTE 1: For Military operations the RTOP system will <u>not</u> be armed, because RTOP is set manually on both engines. Use of RTOP is limited to 5 minutes. For training, the maneuver can be practiced with less than RTOP set manually.

NOTE 2: Except for obstacle avoidance, no turns will be executed below 500 feet AGL.

NOTE 3: 70 knots is defined as: Torque, ITT, Prop RPM, oil pressure and temp within limits, Auto-feather armed, and CWPs out.

NOTE 4: Aborted takeoffs will be physically initiated by the PF in response to an abort call from anyone in the crew. For this reason, the PF must keep his/her hand on the power levers until Vcrit while allowing the PNF to make the required power adjustments during the takeoff roll

NOTE 5: To achieve the best all engines rate of climb, configure the airplane with gear up, flaps 10°. Maintain the published V_{YSE} airspeed.

NIGHT CONSIDERATIONS: Adjust cockpit lights as necessary and ensure a serviceable flashlight is readily accessible. Landing and taxi lights may be left off during takeoffs from runways where dust, smoke, or haze may be encountered. Reduced visual references will make it difficult to maintain the desired ground track. Knowing the surface wind conditions will assist in determining the approximate crab angle into the wind during the climb. Be prepared to transition to instrument flight if visual references are too few or experiencing any symptoms of spatial disorientation.

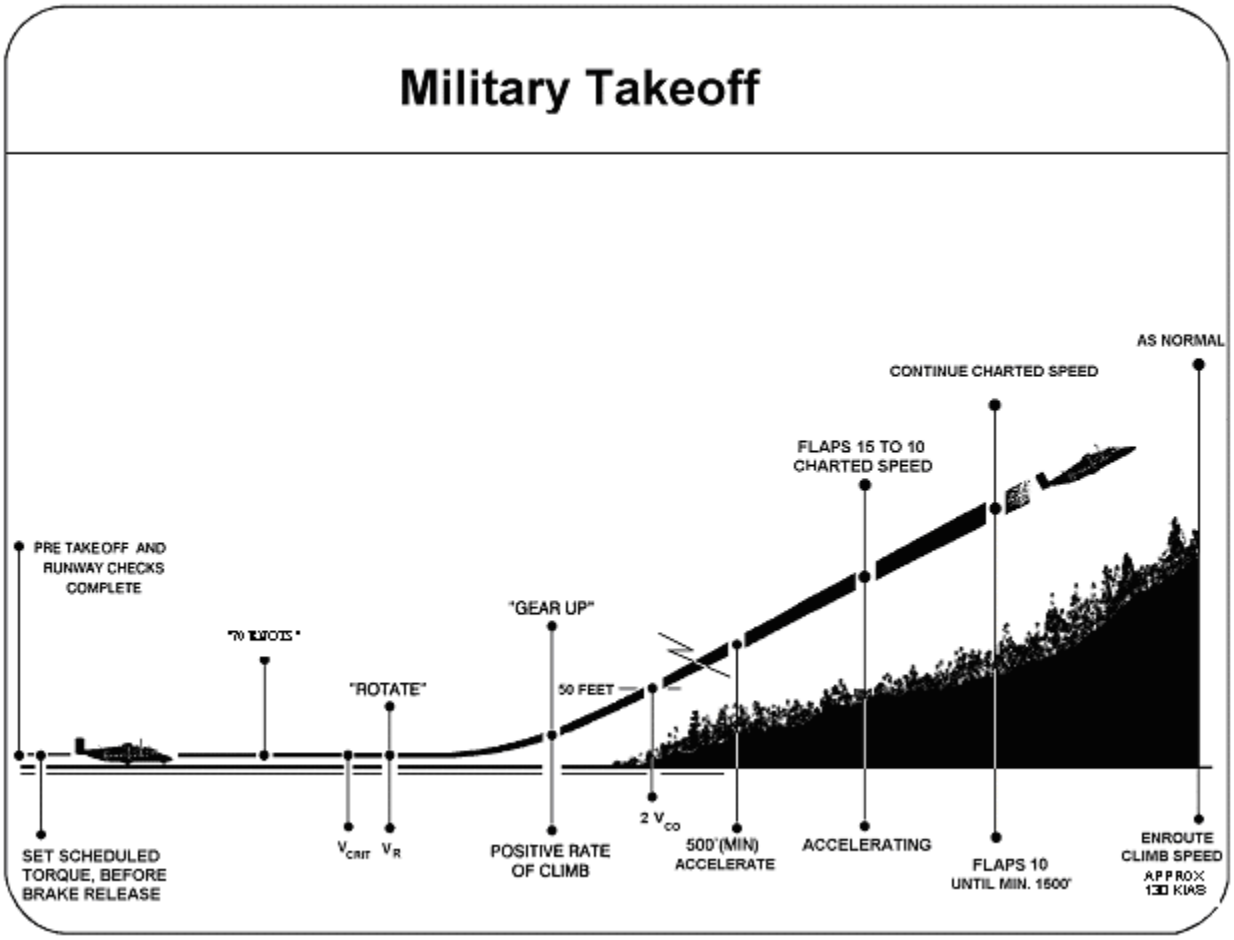
COLD WEATHER CONSIDERATIONS: If the possibility of any ice, snow, or frost accumulation on the flying surfaces exists, do not attempt a takeoff. Activate all anti-ice and deice systems allowing sufficient time for the equipment to become effective. Accumulations of snow, slush, or water will increase takeoff distances. After a takeoff from a runway covered with snow, slush, or water, delay gear retraction and then cycle the landing gear to dislodge any

ice accumulation. When aircraft icing is likely, climb at higher than normal airspeed. Stall speeds may be higher than normal and the stall warning system may be unreliable.

DESERT AND HOT WEATHER CONSIDERATIONS: Use normal takeoff procedures. Avoid taking off in the wake of another aircraft if the runway is sandy or dusty.

MOUNTAIN CONSIDERATIONS: Use normal takeoff procedures. Takeoff and climb performance will be reduced due to density altitude.

REFERENCES:
C-23 AFM/Crew Manual
FM 1-203
TC 1-204



TASK 1120

Perform Steep Turns.

CONDITIONS: In a C-23, VMC.

STANDARDS:

Rated

1. Configure the aircraft at 150 KIAS and prop RPM of 1425.
2. Maintain altitude ±100 feet.
3. Establish and maintain a 40°angle of bank, ±5°.
4. Roll out on desired heading, ±10 degrees.
5. Maintain airspeed, ±10 KIAS.
6. Maintain coordinated flight.
7. Correctly perform crew coordination actions.

Nonrated

1. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. The PF's main focus will be outside the aircraft. The PNF and FE will monitor flight and engine instruments. Maintain surveillance for other traffic, and perform actions requested by the PF.

Procedures. Normal turns are classified as up to 30° bank angle. Steep turns are defined as more than 30° and less than, equal to 45° bank angle. The maneuver can be performed using either outside visual reference or reference to instruments. During the turn, rudder, elevator, aileron and power must be used as required to correct for torque, over banking tendency, and to maintain airspeed and altitude. To enter a turn, apply control pressure that will result in a smooth and uniform rate of change in the bank attitude until the desired angle of bank is achieved. To maintain airspeed and altitude when passing through 30° bank, call for **"Plus 200."** The PNF will increase power by 200 pounds of torque. Plan the roll out to the desired heading using a smooth and uniform reduction of bank angle at the same rate as the roll in. Passing through 30° angle of bank call for **"Minus 200."** The PNF will reduce power by 200 pounds of torque. Use elevator trim as required throughout the maneuver.

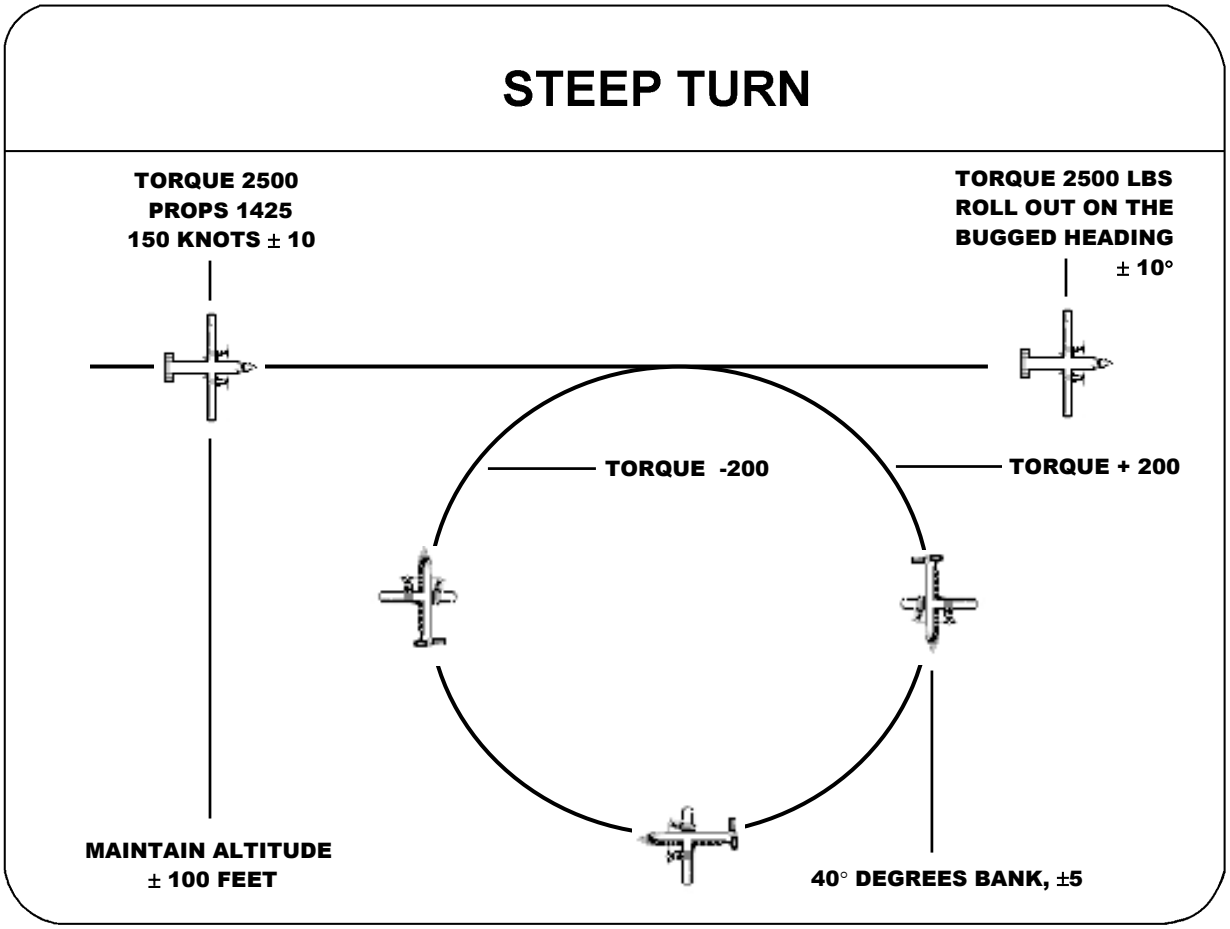
NIGHT CONSIDERATIONS: Before starting turns, the area should be cleared using the technique of off-center viewing. Steep banks at low altitudes should be avoided. When using the lights of cities or towns for a horizon reference, the crew should be aware that disorientation or vertigo might occur. If this happens, the PF should discontinue the turn and return to level flight immediately. If no horizon is visible the PF may have to use instruments as his primary reference.

REFERENCES:
TC 1-204
FM 1-203

AFM/Crew manual

TASK 1120

PROFILE: PERFORM STEEP TURN



TASK 1125

Perform flight at minimum controllable airspeed (Slow flight).

CONDITIONS: In a C-23 or simulator, VMC, above 4000 feet AGL with an IP.

STANDARDS:

Rated

1. Correctly configure the aircraft with prop RPM of 1700 and gear and flaps as necessary.
2. Maintain heading ±10 degrees.
3. Maintain altitude ±100 feet.
4. Maintain airspeed within +5, -0 KIAS.
5. Correctly perform crew coordination actions.

Nonrated

1. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. This training maneuver is to demonstrate and practice the degree of controllability available while flying close to the pre-stall buffet. It provides practice of control techniques and shows the capabilities and limitations of the aircraft in the low-speed regimes. The main focus of the PF will be outside of the aircraft. The PNF and FE will monitor flight and engine instruments, keep his area of observation cleared, and perform actions requested by the PF.

Procedures. The PF, assisted by the PNF, will perform the following actions:

Configure the airplane at 1700 RPM. While maintaining heading and altitude, complete the descent, Approach, Landing checks and Final Landing check. When speed allows, extend flaps to 35°. Allow the aircraft to decelerate to V_{ref}. Adjust pitch attitude as necessary to maintain altitude. Maneuver the airplane in straight-and-level flight, in climbs and descents, and in turns. Do not exceed a standard rate turn. The PF should maintain coordinated flight while maneuvering through the proper use of the rudder and aileron. A good crosscheck is imperative. The following items may be demonstrated and practiced as applicable:

Airplane attitude during the maneuver.

Power required as airspeed is changed.

Control effectiveness and trim requirements.

Rate of turn versus angle of bank and airspeed.

Effects of flap and gear extension and retraction on pitch attitude, and power required.

Effect of torque and P-factor.

Adverse yaw and proverse roll

Complete the maneuver, as directed by the IP, by performing a simulated go-around while either maintaining altitude or climbing to a predetermined altitude. Complete the go-around task procedure and level off at desired altitude and airspeed. Trim as required throughout the maneuver.

NOTE 1: During aircraft qualification this task may be performed with various flap / gear settings. The appropriate V_{ref} speed will be flown.

NOTE 2: While performing this task, if any indication of a stall is encountered, the task will be terminated and a go around will be accomplished.

NIGHT CONSIDERATIONS: High aircraft pitch attitudes may obscure part of the horizon and require a faster crosscheck of whatever lights or visual horizon is observable.

REFERENCES:
FM 1-203
AFM/Crew manual

TASK 1138

Perform fuel management procedures.

CONDITIONS: In a C-23, VMC or IMC.

STANDARDS:

Rated

1. Ensure that required fuel is on-board at the time of takeoff.

2. Initiate in-flight fuel consumption check during Cruise Check.

3. Initiate alternate course of action if actual fuel consumption varies from planning value such that mission cannot be completed with required reserve.

4. Monitor fuel quantity and consumption rate and adjust values in FMS as power settings, altitude and temperature change.

5. Correctly perform crew coordination actions.

Nonrated

1. Respond correctly to appropriate checklist items.

2. Correctly perform crew coordination actions.

3. Correctly compute aircraft actual weight.

DESCRIPTION:

Crew Actions

1. The PNF will input initial fuel data into the FMS. Correct fuel data will be maintained on number one FMS as a minimum. He will compute fuel flow, fuel burnout, and fuel reserve time. The FE will respond correctly to PNF's calls.

2. The PF will acknowledge the results of all fuel checks.

Procedures

1. Perform Before-Takeoff Fuel Check. Determine total fuel on-board and compare with mission fuel requirements. If fuel is inadequate, have aircraft refueled, abort, or revise mission.

2. Perform Initial Airborne Fuel Reading. After aircraft has leveled off or entered mission profile and appropriate power settings are obtained, record the total fuel quantity and time of reading.

3. Perform Fuel Consumption Check. The preferred method of accomplishing the fuel consumption check is with the FMS. If the FMS is not operational, with the aircraft in the mission/cruise profile, 15 to 30 minutes after performing initial airborne fuel reading, record remaining fuel and time of reading. Compute and record rate of consumption, reserve entry time and burnout. Determine if the remaining fuel is sufficient to complete the mission with the required reserve. If fuel is inadequate, initiate an alternate course of action.

4. Monitor Fuel Quantity/Consumption. Periodically monitor fuel quantity/consumption rate. If fuel quantity/flow indicates deviation from the computed values, repeat fuel consumption check, and determine if fuel is adequate to complete mission.

NIGHT CONSIDERATIONS: The PNF should complete all duties associated with fuel management procedures. The PF will verify fuel computations.

REFERENCE:
AR 95-1
NGR 95-1
FM 1-240
C 23 MANUALS
FMS Manuals

TASK 1144

Perform touch-and-go landing.

CONDITIONS: In a C-23 or simulator with an IP, on a suitable runway, with both engines operating.

STANDARDS:

Rated

1. Maintain required altitudes ±100 feet.

2. Maintain appropriate airspeeds ±10 KIAS.

3. Maintain required ground track.

4. Complete Approach and Landing checks no later than at the designated points during the approach.

5. Attain landing approach speed (V_{ref} plus 1/2 wind gust spread) ±5 KIAS.

6. Execute touchdown on a predetermined point minus 0, plus 200 feet with the desired runway track between the main gear during landing and roll out.

7. Correctly perform crew coordination actions.

Nonrated

1. Respond correctly to appropriate checklist items.

2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. On downwind leg, the IP will inform the PF that the landing will be a touch-and-go unless he later calls out **"full stop."** Each crewmember will complete the required checks or procedures pertaining to his crew duties according to the checklist and the preflight briefing. The PF will bug V_{ref} and the IP will bug V_r. The IP will, in addition to performing IP duties, also perform normal PNF duties. He will read the checklist, monitor flight and engine instruments, keep his area of observation cleared, and perform actions requested by the PF. The FE will assist as directed by the PF.

Procedures The PF, assisted by the PNF (IP), will perform the following actions:

1. Complete Landing per Task 1145.

2. After touchdown, maintain power at flight idle and slow the aircraft to V_r -10 KIAS. Maintain directional control during the landing roll with rudders/nosewheel steering and wait for takeoff clearance from the IP.

3. During the landing roll, the IP will set the flaps to the appropriate position, set the trim for takeoff and, if required, arm RTOP. He will then announce that the aircraft is ready for takeoff by giving the command **"cleared for takeoff."**

4. The PF will advance the power to approximately 2000 torque and call **"set MTOP"** as in a normal takeoff. The PNF will set the power. From this point, continue the takeoff using the procedures specified for a normal takeoff.

NOTE 1: Although designated points are given throughout the approach for completing the approach/landing checks, the PF may perform these procedures earlier.

NOTE 2: A suitable runway is defined in AR 95-1 as meeting accelerate-stop plus 2000 feet. In order to meet the 2000' acceleration and stop distance requirement of AR 95-1, for touch and go landings, performance planning can be accomplished by using the Take-off Field Length Data Section, of the Flight Manual, and subtract 2000' off of the runway length before entering the chart. This will then become the maximum gross weight to perform touch and go landings.

NOTE 3: It is the IP's responsibility to obtain ATC clearance for the touch-and-go landing and to advise ATC if the procedure is later changed to a full stop landing.

NOTE 4: A touch and go will not be performed at the conclusion of a landing with one engine simulated inoperative.

NIGHT CONSIDERATIONS: Normal approach and landing techniques are used at night. When visibility is lowered by haze or smoke, the range of the landing light may be insufficient to see obstructions in time to avoid them. The electronic/visual glideslope indicator should be used as the most accurate and reliable approach-angle indicator. If visual glideslope indicator is not available, the runway lights along with the threshold lights should be used to establish a sight picture during the approach. The apparent distance between runway lights can also be used to judge distance above the runway.

REFERENCES:
AFM/Crew manual
AR 95-1
NGR 95-1
DOD FLIP
FM 1-203
C-23 checklist
Task 1008
Task 1020
Unit SOP

TASK 1145

Perform normal landing.

CONDITIONS: In a C-23 or simulator, VMC or IMC.

STANDARDS:

Rated

1. Maintain required altitudes ±100 feet.

2. Maintain appropriate airspeeds, ±10 KIAS, in the pattern, +10, -5 KIAS on final.

3. Maintain required ground track.

4. Complete the Approach, Landing and Final Landing checks no later than the designated points during the approach.

5. Adhere to stabilized approach guidelines including: maximum bank angle of 30°, rate of descent no greater than 1000 fpm below 500′ above field elevation and comply with the flap selection criteria specified below.

6. Maintain glideslope, using ILS glideslope, VASI, PAPI etcetera, if available, until a lower altitude is necessary for a safe landing.

7. Attain V_{ref}, for the appropriate flap setting, (plus one-half wind gust spread, up to a maximum of 15 knots), passing 50′AGL.

8. Touchdown on predetermined point, (minus 0, plus 200 feet), with the runway centerline between the main gear.

9. During roll out, apply foreword pressure on control yoke, keep wings level, and maintain runway centerline with rudders until reaching a taxi speed, then transition to steering tiller.

10. Correctly perform crew coordination actions including airspeed and rate of descent calls by the PNF on final approach.

Nonrated

1. Respond correctly to appropriate checklist items.

2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. Each crewmember will complete the required checks or procedures pertaining to his crew duties according to the checklist and the preflight briefing.

Procedures. The PF, assisted by the PNF, will perform the following actions:

Complete Descent Check before entering the traffic pattern. Maneuver aircraft into position to enter the downwind leg at a 45° angle, at traffic pattern altitude, and at the proper airspeed (approximately 2000 lbs torque). Straight-in or base-leg entry may be used if approved by air traffic control. Complete the Approach Check on downwind leg prior to turning base leg (prior to 2 miles on straight-in or extended base leg). At the midfield position of the downwind leg,

with speed 145 KIAS or less, call **"Gear-down, Flaps-10, Approach Checks."** Starting the base turn, the PF sets the torque to 1500lbs, and calls **"Flaps-15, Landing Checks."** Adjust pitch and power on base to maintain 120 KIAS. The PNF performs and completes the landing checks delaying the selection of flaps 35°, until requested by the PF. Turn final so as to complete the turn above 500 AGL. When desired, the PF will call **"Flaps 35°, Final Landing Checks."** Adjust pitch and power during the final descent so as to land on a predetermined touch down point. This will normally be between or slightly past the Aiming Point Markers or approximately 1000′ from the threshold. Once flaps 35° have been selected, reduce airspeed so as to cross the threshold at 50′ decelerating through V_{ref} plus one-half the wind gust spread. During crosswind conditions, use the crab-into- the-wind method to correct for drift on all legs of the traffic pattern until crossing the threshold then transition to a slip until touch down. Reduce power to idle and touch down on the main gear. Gently lower the nose wheel to the ground and hold foreword pressure on the control yoke, keeping the wings level by applying ailerons into the wind during the roll out. Depress the ground/air levers and select Ground Fine, applying brakes and reverse as necessary. Upon reaching a taxi speed, the PF will call, **"Your Ailerons"** and move his hand to the steering tiller. The PNF will continue to hold ailerons into the wind as required during the remaining roll out. At taxi speed, the PF calls for, **"Fuel and Props"** and the PNF will select Fuel to Ground and Props slowly to Taxi. When the aircraft has cleared the runway the left seat pilot will call **"Controls - Lock"** and call for **"After Landing Checks."** The right seat pilot will lock the controls and complete the After Landing Checks.

NOTE 1: Although designated points are given for completing the Approach, and Landing Checks throughout the approach, this does not preclude the aviator from performing these procedures earlier than at the designated points.

NOTE 2: When performing circling approach during instrument flight, maintain circling approach altitude until normal approach can be made to the runway, i.e. intercepting normal Glide path using VASI, PAPI, etc.

NOTE 3: Landing distance charts for flaps 15° landings can be found in the autopilot supplement in the Flight Manual. These charts are factored so as to allow the airplane to stop within 60% of the effective runway length derived from the chart.

NOTE 4: For landings made from the right seat, the maneuver description remains the same with all duties exchanged until after the aircraft is on the ground. When reaching a taxi speed, the right seat will call out **"My ailerons, your controls"** at which time, the left seat will place his left hand on the steering tiller, right hand on the power levers, and his feet on the rudders/brakes and then take control of the aircraft. From this point the duties are as indicated in the maneuver description.

NOTE 5: A stabilized approach is characterized by a constant-angle, with a constant-rate of descent approach profile ending near the touchdown point.

STABILIZED APPROACH CRITERIA FOR INSTRUMENT LANDINGS: When conducting non-precision instrument approaches, select flaps 35° when leaving MDA after the runway environment is in sight. When conducting precision approaches, flaps 35° landings can be made if the runway environment is in sight at or above 500′ TDZE. While conducting a precision approach when the ceiling is below 500′, continue the approach and land with flaps 15°. The Final Landing Checks will be completed after the final selection of flaps is made. Once the runway is in sight, continue to decelerate to cross the runway threshold at V_{ref}, plus any

gust corrections. When conducting flaps 15° landings, the GPWS GEAR and FLAP INHIBIT button must be pushed in order to disable the "TOO LOW FLAP" GPWS warning on landing.

CROSSWIND CONSIDERATIONS: During crosswind conditions, use the crab-into-the-wind method to correct for drift on all legs of the traffic pattern until final. The crab-into-the-wind is changed to a slip-into-the-wind for touchdown.

NIGHT CONSIDERATIONS: Normal approach and landing techniques are used at night. When visibility is lowered by haze or smoke, the range of the landing light may be insufficient to see obstructions in time to avoid them. The electronic/visual glideslope indicator should be used as the most accurate and reliable approach-angle indicator. If visual glideslope indicator is not available, the runway lights along with the threshold lights should be used to establish a sight picture during the approach. The apparent distance between runway lights can also be used to judge distance above the runway.

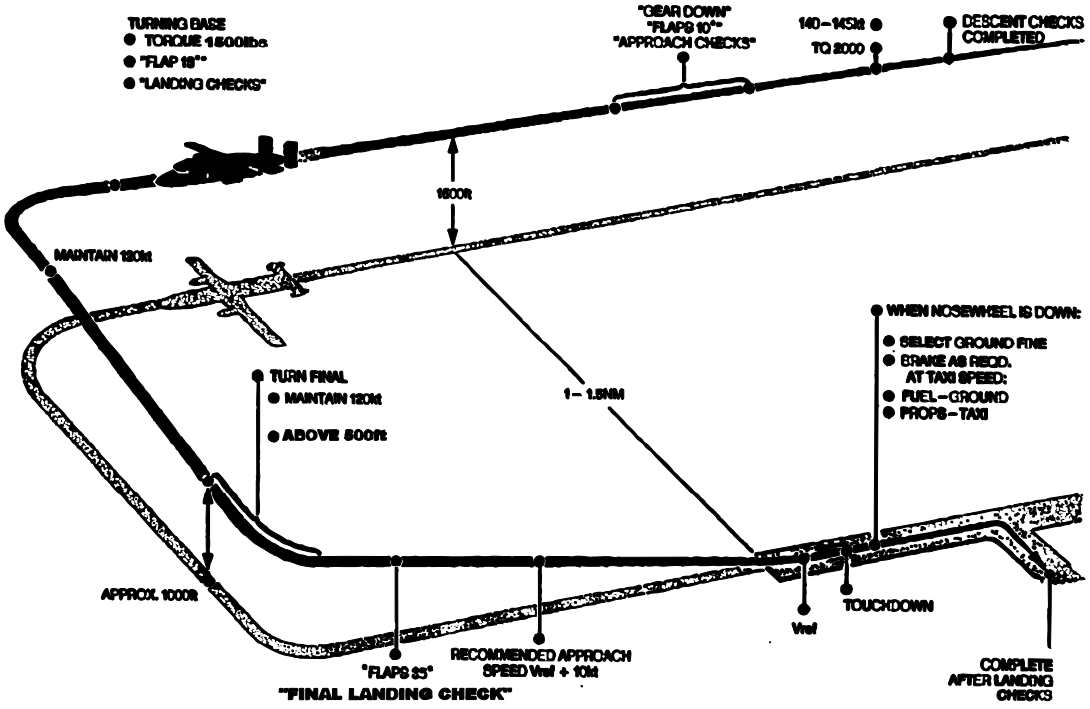
COLD WEATHER CONSIDERATIONS: Landings on icy runways should be made only when necessary. Braking and steering are less effective under slick runway conditions, and hydroplaning may occur at high speeds on wet runways. To avoid impairing visibility, reverse power should be used with caution when landing on a runway covered with snow or standing water.

DESERT AND HOT WEATHER CONSIDERATIONS: Use normal landing procedures. Use reverse power and ground fine range with caution to avoid brownout and to preclude ingesting excessive amounts of sand and dust into the engines

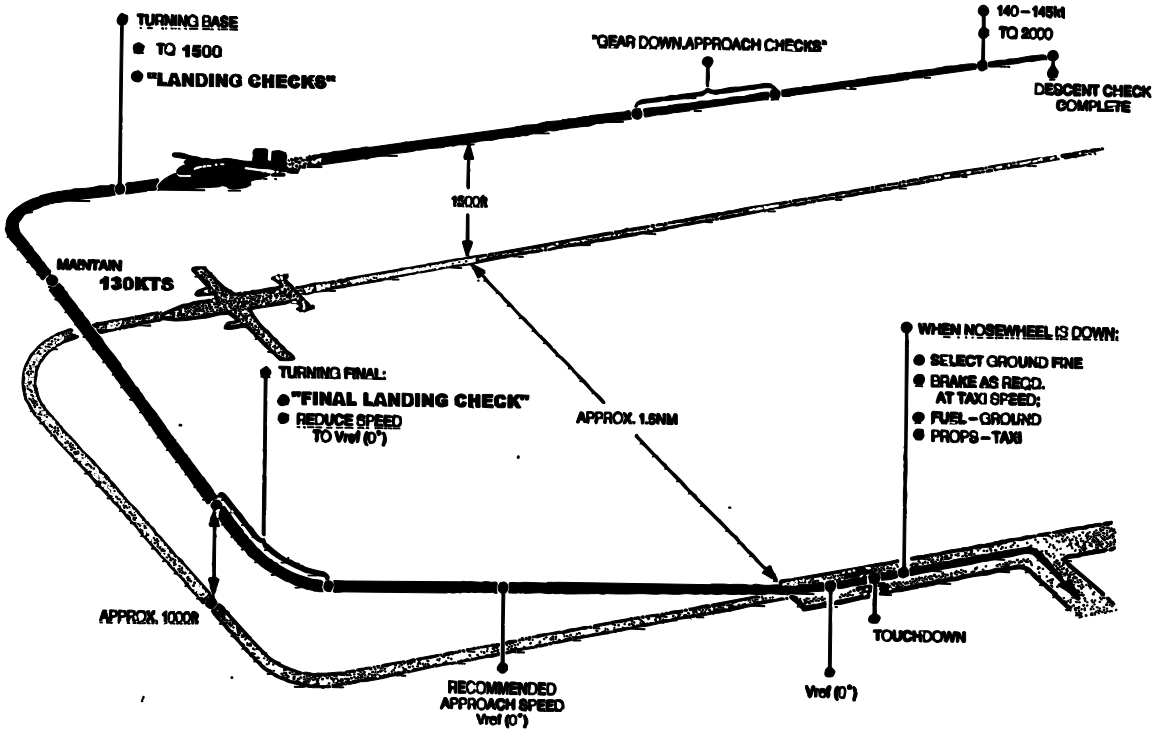
MOUNTAIN CONSIDERATIONS: If descending in mountainous terrain, be aware of the potential for turbulence associated with mountain waves and, if required, reduce speed to V_{ra}.

REFERENCES:
FAA-P-8740-24 Tips on Winter Flying
AIM
AFM/Crew manual
Checklist
FM 1-203
TC 1-204
Unit SOP

TASK 1145
Perform Normal Landing.



No Flaps Landing



TASK 1146

Perform military landing.

CONDITIONS: In a C-23 or simulator aircraft, VMC.

STANDARDS:

Rated

1. Maintain appropriate altitudes ±100 feet.

2. Maintain V_{ref} ±10 KIAS on base leg, slowing to V_{ref} +5, -0 KIAS on final.

3. Maintain required ground track.

4. Complete Approach and Landing Checks no later than designated points during the approach.

5. Establish and maintain approach speed (v_{ref} plus one-half the wind gust speed -0, +5 KIAS) before intercepting final approach angle.

6. Intercept and maintain a constant approach angle commensurate with either a Ground Roll or a Landing Distance landing approach.

7. Touch down on a predetermined touchdown point -0, +100 feet, with the desired runway track between the main gear during landing and roll out.

8. Correctly perform crew coordination actions including airspeed and rate of descent calls by the PNF on final approach.

Nonrated

1. Respond correctly to appropriate checklist items.

2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. Each crewmember will complete the required checks or procedures pertaining to his crew station according to the checklist and the preflight briefing. The PNF will also read the checklist, monitor flight and engine instruments, keep the aircraft cleared, and perform actions requested by the PF.

Procedures The PF, assisted by the PNF, will perform the following actions:

NOTE: There are two types of landing techniques, landing distance (5.2°) and ground roll (3.0°).

Complete Descent Check before entering the traffic pattern. Maneuver aircraft into position to enter the downwind leg at a 45° angle, at traffic pattern altitude, and at the proper airspeed. Straight-in or base-leg entry may be used if approved by air traffic control. Complete the Approach Check on downwind leg prior to turning base leg (prior to 2 miles on straight-in or extended base leg). At the midfield position of the downwind leg, with speed 145KIAS or less, call **"Gear-down, Flaps-10, Approach Checks."** Starting the base turn, PF sets the torque to 1500lbs and calls **"Flaps-15, Landing Checks."** The PNF performs and completes the landing checks. The PF will call **"Flaps-35"** on base and the PNF will set the flaps to 35°. The PF

adjusts airspeed to V_{ref}+ 10 KIAS. Plan the final approach leg to allow time for approach angle and airspeed corrections during training, or for tactical maneuvering as determined by METT-T. Turn final so as to complete the final turn above 500 feet AGL while allowing the aircraft to decelerate to V_{ref} in the turn and call **"Final Landing Checks."** The desired approach angle, (5.2° for the minimum landing distance or a 3.0° for the minimum ground roll) should be established as soon as possible. Adjust the pitch attitude and power as required to hold V_{ref} and proper approach angle throughout the final approach. During crosswind conditions, use the crab-into- the-wind method to correct for drift on all legs of the traffic pattern until crossing the threshold then transition to a slip until touch down. To land on the planned touchdown point, the basic technique is to maintain a constant descent angle, (sight picture) while aiming short of the intended touchdown point so as to account for the distance covered during the round out. It is important to remember that the decision to go around or land must be made early. For a Landing Distance (5.2°) landing, maintain V_{ref} to 50 feet, then select flight idle. At 20 feet begin the flare. For a Ground Roll (3°) landing, maintain V_{ref} until about 10 feet, then select flight idle and make a smooth transition from approach to landing attitude. Touchdown should be made on the main gear, with power as necessary to control rate of descent for a smooth touchdown. Immediately after touchdown, lower nose wheel to the ground, select reverse, and apply aileron into the wind and maximum braking as required. Upon reaching a taxi speed, the PF will call, **"Your Ailerons"** and move his hand to the steering tiller. The PNF will continue to hold ailerons into the wind as required during the remaining roll out. At taxi speed, the PF calls **"Fuel and Props"** and the PNF will select Fuel to Ground and Props slowly to Taxi. When the aircraft has cleared the runway the left seat pilot will call **"Controls - Locked"** and then call for **"After Landing Checks."** The right seat pilot will lock the controls and complete the After Landing Checks.

NOTE 1: Although designated points are given for completing the approach and landing checks throughout the approach, this does not preclude the pilot from performing these procedures earlier than designated points.

NIGHT CONSIDERATIONS: Use normal night-landing techniques (see Task 1145). Due to the increased pitch attitude required during approaches at slower-than-normal airspeed, the landing lights may not illuminate the runway properly during the approach. When visibility is lowered by haze or smoke, the range of the landing light may be insufficient to see obstructions in time to avoid them. The electronic/visual glideslope indicator should be used as the most accurate and reliable approach-angle indicator. If visual glideslope indicator is not available, the runway lights along with the threshold lights should be used to establish a sight picture during the approach. The apparent distance between runway lights can also be used to judge distance above the runway.

CROSSWIND CONSIDERATIONS: During crosswind conditions, use the crab-into-the-wind method to correct for drift on all legs of the traffic pattern until final. The crab-into-the-wind is changed to a slip-into-the-wind for touchdown.

COLD WEATHER CONSIDERATIONS: Landings on icy runways should be made only when necessary. Braking and steering are less effective under slick runway conditions, and hydroplaning may occur at high speeds on wet runways. To avoid impairing visibility, reverse power should be used with caution when landing on a runway covered with snow or standing water.

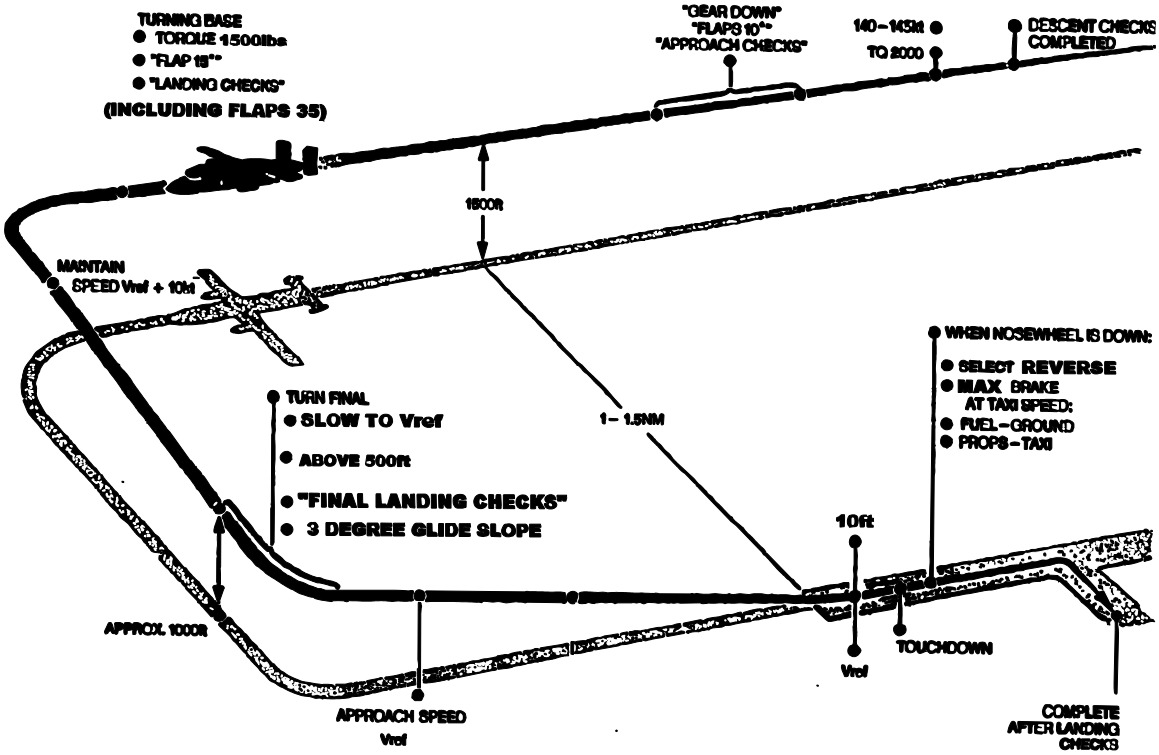
DESERT AND HOT WEATHER CONSIDERATIONS: Use normal landing procedures. Use reverse power and ground fine range with caution to avoid brownout and to preclude ingesting excessive amounts of sand and dust into the engines

MOUNTAIN CONSIDERATIONS: If descending in mountainous terrain be aware of the potential for turbulence associated with mountain waves and reduce speed to $V_{ra,}$ if required.

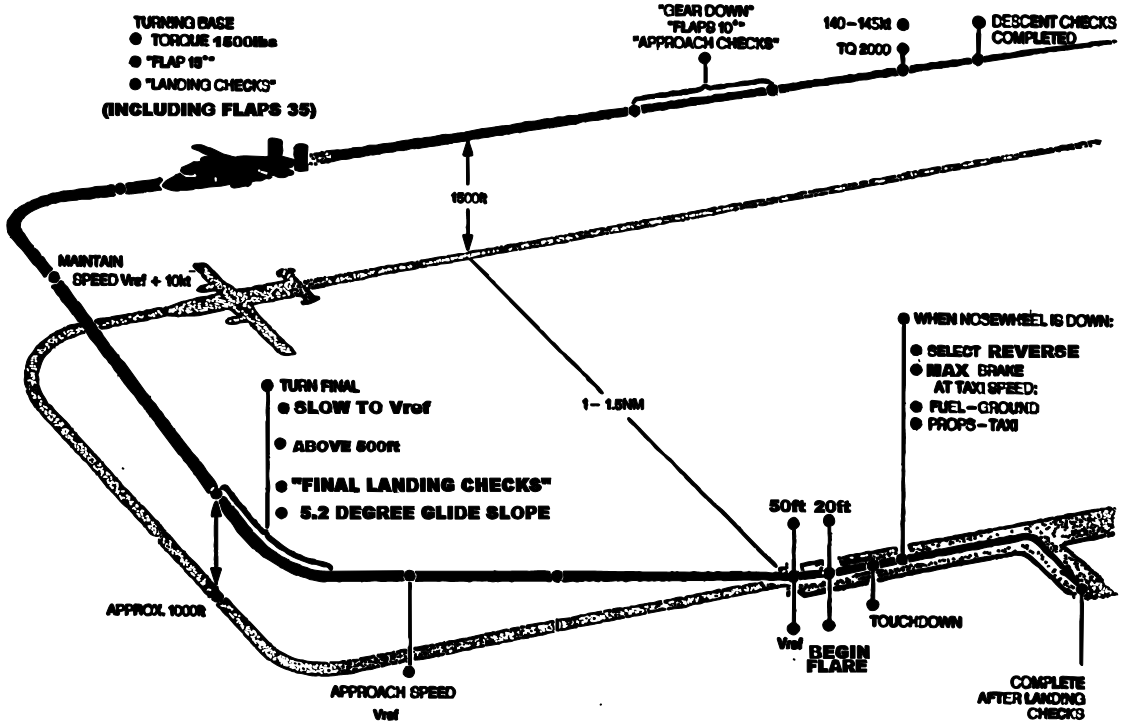
REFERENCES:
FAA-P-8740-24 Tips on Winter Flying
AIM
AFM/Crew manual
Checklist
TC 1-204
FM 1-203

TASK 1146

MILITARY LANDING-GROUND ROLL



MILITARY LANDING- LANDING DISTANCE



TASK 1177

Perform go-around.

CONDITIONS: In a C-23 or simulator, VMC.

STANDARDS:

Rated

1. Perform go-around IAW the AFM/Crew manual.
2. Maintain heading ±10 degrees.
3. Maintain appropriate airspeed, -0, +10 KIAS.
4. Correctly perform crew coordination actions.

Nonrated

1. Respond correctly to appropriate checklist items.
2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. The PF's main focus will be outside the aircraft. The PNF and FE will monitor flight and engine instruments, keep the aircraft cleared, and perform actions requested by the PF.

Procedures. The PF, assisted by the PNF, will perform the following actions:

When it becomes doubtful that a safe landing can be accomplished, the PF will advance the power levers to approximately 3000 and call **"MTOP, Flaps-15."** The PNF will set MTOP and position flaps to 15°. The PF will select the climb attitude and maintain a minimum airspeed of not less than V_{ref}. The PNF will call **"positive rate,"** when a positive rate of climb is established and the PF will then call **"Gear-Up."** Allow the aircraft to accelerate in a climb so that 120 KIAS is reached at 500 feet. Passing 120 KIAS the PF will call **"Flaps–10."** Passing 125 KIAS, the PF will call **"Flaps-Up."** Passing 130 KIAS, the PF will call **"Climb Power, After Takeoff Checks."** The PNF will retract the flaps as requested and complete the After Takeoff checks as soon as practical.

NOTE: If a go-around is initiated in the traffic pattern prior to the landing check, use power as required (cruise climb, slow cruise) climbing to, or maintaining, the desired altitude and airspeed. Comply with any local noise abatement procedures.

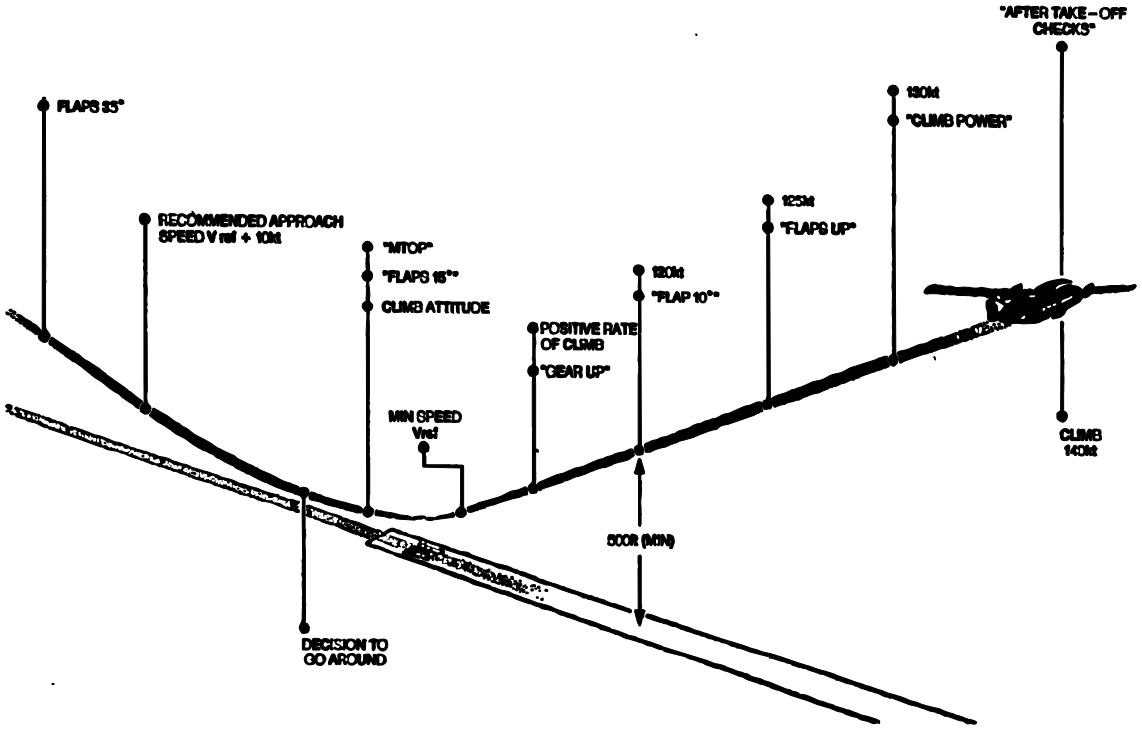
NIGHT CONSIDERATIONS: For traffic avoidance/aircraft identification, the landing lights should be left on at least until traffic pattern altitude has been reached. The crew should monitor heading and altitude instruments closely and be prepared to transition to instrument flight if the visual horizon is lost.

REFERENCES:
FM 1-240
AFM/Crew manual
TC 1-204
FM 1-203

TASK 1177

Perform go-around.

GO AROUND - FLAPS 35°



TASK 1182

Perform radio communication/intercom procedures.

CONDITIONS: In a C-23 or simulator; with two-way radio or intercom communications established.

STANDARDS:

Rated

1. Use correct radio procedures IAW DOD FLIP and AIM during all applicable radio transmissions.

2. Operate all on-board aircraft communication equipment IAW AFM/Crew Manual.

3. Correctly perform crew coordination actions.

Nonrated

1. Correctly use interphone/intercom system to communicate with the crew.

2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. Radio communication is primarily the PNF's responsibility. However, if crewmembers monitor two frequencies simultaneously, they will keep each other informed about any actions/communications they conduct on their respective frequency. Use standard terms and phraseology for all intercom communications. The FE will monitor all communication radios and operate the intercom system correctly.

Procedures. The crew will use proper radio communication procedures and phraseology. During normal operations, monitor aircraft radio communications. During critical times do not interrupt external communications.

REFERENCES:
DOD FLIP
FM 1-240
AFM/Crew manual
AIM

TASK 1201

Perform instrument takeoff.

CONDITIONS: In a C-23 or compatible simulator, IMC or simulated IMC

STANDARDS:

Rated

1. Using checklist, complete Taxi, Pre-takeoff, runway, and After-takeoff Checks.

2. During takeoff roll, maintain heading ± 5 degrees.

3. Obtain MTOP within 10 seconds and before reaching 70 KIAS.

4. Do not exceed limits prescribed in the AFM/Crew Manual.

5. Rotate at computed rotation speed (V_r) +5 –0 KIAS.

6. Climb at V_2 + 15 KIAS (not to exceed a 15 degree pitch attitude) until single-engine maneuvering altitude is reached (not less than 500 feet AGL)

7. Correctly operate and utilize Flight Director IAW Task 1250.

8. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions

1. The PF's main focus will be inside the aircraft except during the start of the takeoff. He will monitor engine instruments carefully while initiating power application and be prepared to abort the takeoff if aircraft performance is not satisfactory.

2. The PNF will assist the PF by verifying flight instrument settings, monitoring engine instruments, adjusting power, and reading the checklist. He will acknowledge all actions requested by the PF.

Procedures. The PF, assisted by the PNF, will perform the following actions:

Complete the Taxi and Pre-takeoff Check. Select both Flight Director modes to HDG and ALT SEL, and pitch V bars 10° up. Set altitude alerter to clearance altitude. Align aircraft with runway centerline, ensuring that nose wheel is straight before stopping. Recheck heading and center heading bug with runway heading. Complete takeoff as described in Task 1104, Normal Takeoff. After the brakes are released, initial directional control should be accomplished predominantly with the aid of outside visual references. As the takeoff progresses, the crosscheck should transition from outside reference to the instruments. The rate of transition from outside references to inside references is directly proportional to the rate at which the outside references deteriorate. Approaching rotation speed, the crosscheck should be totally committed to the instruments so that erroneous sensory inputs can be ignored. At rotation speed, establish the takeoff pitch attitude on the attitude indicator/flight director and press the SYNC button, if applicable. Maintain this pitch attitude and wings level until the aircraft becomes airborne. When both the vertical velocity indicator and altimeter show positive climb indications, the PNF will call **"Positive Rate."** The PF will apply pressure to the brakes, and

then release them, then call for **"Gear UP."** At this point the PNF will position the gear handle to the up position and ensure the landing gear has satisfactorily retracted

After the landing gear is retracted, adjust the pitch attitude as required to attain V_2 + 15 KIAS until passing safe single engine altitude (500 feet minimum) or, circling minimums whichever is greater, before accelerating to the cruise-climb speed as described in Task 1104. Control the bank attitude to maintain the desired heading. Crosscheck supporting instruments as required throughout the maneuver.

REFERENCES:
AFM/Crew manual
FMS Manual

TASK 1210

Perform holding procedures.

CONDITIONS: In a C-23 or simulator, IMC, or simulated IMC.

STANDARDS:

1. Maintain assigned altitude ±100 feet.

2. Maintain appropriate airspeed ±10 KIAS (normally slow cruise torque; 2000lbs and props 1425rpm).

3. Properly tune and identify NAVAIDs and/or properly configure FMS.

4. Correctly enter holding pattern.

5. Fly correct holding pattern.

6. Use correct tracking procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions

1. The PF's main focus will be inside the aircraft. He will announce all frequency changes, instrument settings, and ATC information that the PNF does not monitor. He will verify the identification of all stations tuned by the PNF.

2. The PNF will assist by keeping the area cleared when operating in VMC and tuning the required frequencies when requested by the PF. He will note holding pattern instructions and verify pattern location and entry leg. He will note arrival and departure times and outbound leg times. He will verify all frequency changes requested by the PF.

Procedures. The PF, assisted by the PNF, will perform the following procedures:

1. Timed holding. Before arrival at the holding fix, analyze holding instructions to determine holding pattern location and entry procedure. When within 3 minutes of the holding fix, reduce airspeed as required. Upon arrival at the holding fix, announce arrival and turn (if required) to the predetermined outbound heading. Have the PNF note the time and make the appropriate report to ATC. Check navigation instruments to confirm the position of the aircraft in relation to the inbound course. Maintain the outbound heading, and at the designated time, turn to the inbound course. Apply normal tracking procedures to maintain an inbound course. The PNF should assist in computing the inbound or outbound times. When holding at a NAVAID, begin outbound time when abeam the station. When holding at an intersection, begin the outbound time when the outbound heading is established.

2. DME holding. Before arrival at the holding fix (normally a radial and DME fix from a VORTAC/TACAN station), analyze holding instructions to determine holding pattern location and entry procedure. When within 3 minutes of the holding fix, reduce airspeed as required. Upon arrival at the holding fix, announce the arrival and turn (if required) to the predetermined outbound heading. Have the PNF note the time, and make the appropriate report to ATC. Check navigation instruments to confirm the location of the aircraft in relation to the inbound course.

The length of the outbound leg will be attained as specified according to the Flight Information Publications (FLIP) or as directed by ATC. Begin an inbound turn at the appropriate DME point and apply normal tracking procedures to maintain an inbound course.

NOTE: The FMS may be used for holding procedures. A ground based navigation system should be used to back up the holding procedures, if available.

NOTE: Recommended short-term holding speed is 140 KIAS. Adjust airspeed to comply with airspace, ATC, or fuel endurance requirements.

REFERENCES:
AIM
DOD FLIP
FM 1-240

TASK 1212

Perform Enhanced Ground Proximity Warning System (EGPWS)/ Terrain Avoidance Warning System (TAWS) operations.

CONDITIONS: In a C-23 equipped with GPAAS/GPWS, EGPWS or TAWS, under VMC, IMC, simulated IMC, in a compatible simulator, or in a classroom environment.

STANDARDS:

1. Correctly turn on, test, adjust, and operate, the terrain avoidance equipment according to the AFM/Crew Manual or Manufacturer's Operating handbook.

2. Correctly identify terrain avoidance cockpit indications and symbology.

3. Correctly respond to terrain avoidance advisories and warnings.

4. Use correct terrain avoidance phraseology.

NOTE. TAWS standards addressed within this task will be utilized for aircraft GPAAS/GPWS equipped.

DESCRIPTION:

Crew Actions.

1. Prior to takeoff, the crew will check the system for proper operation. Crews will observe precautions specified in the AFM/Crew Manual, TAWS Flight Manual Supplement, or the equipment-operating handbook.

2. The operation of the terrain avoidance equipment in flight is the PNF's responsibility. Crewmembers will adjust the terrain avoidance equipment as required. Normally, the TAWS "pop-up" visual display is the priority display on the MFD and will override the weather and/or TCAS display when there is a terrain alert. If the installation does not include the terrain display as a pop up on the MFD, then crewmembers will select the terrain display during flight whenever there is a TAWS "Warning" or "Alert." When the particular installation does not include the terrain as a pop-up display and terrain is the overriding concern, as in approaches or departures in mountainous areas or receiving vectors in mountainous areas, the MFD or EGPWS display will be operated in the terrain mode.

3. When IMC or at night, all flight crews will respond to a TAWS Warning to "PULL UP" by executing an immediate climb. If the warning occurs during an instrument final approach, the crew will climb and execute the proper missed approach procedure.

4. When VMC, flight crews are authorized to disregard a terrain avoidance warning if, and only if, they (both crewmembers) have absolutely identified, beyond any doubt, the terrain which caused the warning and are certain of the capability to clear the terrain. Keep in mind, the warning could be for a tower, which may be difficult to detect. If either crewmember has any doubt, then correctly respond to the terrain avoidance warning.

5. Crews are authorized to deviate from their ATC clearance to the extent necessary to comply with a TAWS warning. After a deviation, as soon as workload permits, report to ATC.

6. Upon receiving a terrain avoidance warning during an instrument approach, after completion of the before landing check, the missed approach/go-around procedure must be initiated to assure terrain clearance.

The Terrain Awareness and Display (TAD) function should be inhibited by selecting the TERRAIN INHIBIT switch when:

a. When within 15 nm of an airport, not contained in the EGPWS database, in which you intend to land.

b. When the Flight Management System (FMS) is in dead reckoning (DR) mode.

c. When conducting repetitive day closed traffic/traffic pattern operations.

REFERENCES:
AFM
Crew Manual
Equipment operating handbook (instructions)

TASK 1215

Perform precision approach.

CONDITIONS: In a C-23 or simulator, IMC, or simulated IMC.

STANDARDS:

1. Execute approach IAW DOD FLIP, approved instrument procedure, and AR 95-1.

2. Maintain headings ±5 degrees.

3. Maintain altitudes ±100 feet.

4. Properly operate Flight Director IAW Task 1250, during all approaches.

5. ILS--remain within half scale deflection of CDI. On final approach, maintain glide-slope indicator within half-scale deflection.

6. Perform Approach and Landing Checks prior to final-approach descent and Final Landing check after landing flap setting is selected.

7. Adhere to stabilized approach criteria including: maximum bank angle of 30°, rate of descent no greater than 1000 fpm below 500 feet above field elevation and comply with the flap selection criteria specified below.

8. Make immediate heading and altitude corrections as issued by ATC.

9. Do not continue the approach below DA unless the parameters of AR 95-1 arrival criteria are met. If AR 95-1 conditions are not met, perform a missed approach.

10. Maintain airspeed 120 KIAS ±10 knots.

11. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions.

1. The PF's main focus will be inside the aircraft. Before starting the approach, the PNF will obtain weather, winds, current altimeter, active runway and remarks from ATIS, AWOS, or ATC, as appropriate. The PF will review the approach procedure with the PNF, and brief the planned landing flap setting, (15º or 35º) based on ceilings, as well as runway conditions, winds, etc. Normally, passing the initial Approach Fix, or within 10 miles from the final descent point, reduce torque to 2000 and allow the speed to slow to 140-145 KIAS. ATC requirements, however, may require the crew to maintain a higher airspeed until closer to the final descent point. In these instances, there are numerous factors that the crew must consider before accepting such requests including, altitude, weather conditions, procedure, airport familiarity, and crew proficiency. Do not accept ATC request that will sacrifice aircraft control and stabilized approach criteria. Within 5 miles from, the final descent point, PF will call for the Approach and Landing Checks. The PF will set torque to maintain proper approach speed. At glideslope intercept, the PF will adjust torque to maintain glideslope and approach speed. When the PNF sees the approach lighting system, and expects to keep it in sight, he will call **"Approach lights."** When the PNF has the runway environment insight, they will call **"Go visual."** The PF will call for the flaps to be set, if landing flaps 35°, and **"Final Landing**

Checks" and then transition their scan outside and adjust power so as to cross the runway threshold at V_{ref} (plus any gust correction) while maintaining glideslope. Do not fly below the glideslope. The PNF will, as a minimum, make the callouts listed in NOTE 5 as well as any other requested by the PF.

2. The Stabilized Approach Concept affords the safest and easiest transition from instrument flight to visual conditions. By flying the approach at V_{ref} +10 and maintaining the approach flap setting for landing, minimal speed and pitch adjustments are required for landing. If the ceilings are at or above 500 feet agl (provided the runway environment is in sight by 500 feet agl), a flaps 35° landing can safely be made. In this case the approach may be flown at 120 KIAS until the runway environment is in sight. When runway environment is in sight the PNF will call **"Go Visual."** The PF will call **"Flaps 35, Final Landing Checks."** Reduce speed so as to cross the runway threshold at V_{ref} plus any gust correction. When ceilings are below 500 feet agl, land with flaps 15°. When the Landing checks are completed, slow to V_{ref} flaps 15°+10 KIAS. This will be the approach speed to be flown until the runway environment is in sight. When runway environment is insight the PNF will call **"Go Visual."** The PF will call **"Final Landing Checks."** Thereafter, reduce speed so as to cross the runway threshold at V_{ref} plus any gust correction. In situations where a flap 35° landing was planned, but the weather conditions are deteriorating and it becomes doubtful that the runway environment will be in sight by 500 feet agl, the approach may be continued to a flaps 15° landing if runway length, condition, and wind will allow a flaps 15° landing, and, the approach speed is reduced to V_{ref} +10KIAS for flaps 15° as soon as possible. (Remember to change bug speeds to V_{ref}, flaps 15°).

Procedures. Refer to FM 1-240 for a complete description of each type of approach procedures.

NOTE 1: Autopilot usage at PC's discretion.

NOTE 2: The Flight Director will be used.

NOTE 3: When runway length, conditions or wind will not permit a flaps 15° landing as required above, part of the Stabilized Approach Concept must be abandoned and a flaps 35° landing be made after the runway environment is in sight. In order to retain some aspect of a Stabilized Approach in this case fly the approach at V_{ref} +10KIAS for flaps 15°. When the runway environment is in sight, select flaps 35° and reduce speed so as to cross the runway threshold at V_{ref} (flaps 35°) plus any gust correction. This will minimize the amount of speed to dissipate before touchdown and reduce the pitch change as flaps are extended to 35°. Landing distance charts for flaps 15° landings can be found in the autopilot supplement in the Flight Manual. When conducting flaps 15° landings, the GPWS GEAR and FLAP INHIBIT button must be pushed in order to disable the "TOO LOW FLAP" GPWS warning on landing.

NOTE 4: When this task is being performed simultaneously with task 1315 (Perform single engine landing), and the approach is a circling approach, the decision to complete the Approach Check prior to the final descent inbound must be tempered with other factors such as gross weights, weather conditions, and aircraft performance. If, while circling to land, the aircraft will not maintain altitude, retract the landing gear. However, once this is done, the entire check must be repeated prior to the landing.

NOTE 5: The PNF will make the following callouts:

ALTITUDE

"1000′ above"

"500′ above"

"100′ above"

AT MISSED APPROACH POINT

If criteria in AR95-1 and for stabilized approach met **"Go Visual"**

If criteria in AR95-1 and for stabilized approach not met **"Go Missed"**

PNF may make **"go visual"** call out any time on the final approach when criteria mentioned above is met and is expected to remain so.

AIRSPEED

±10 KIAS

COURSE DEVIATIONS

1 dot deviation left or right on HSI

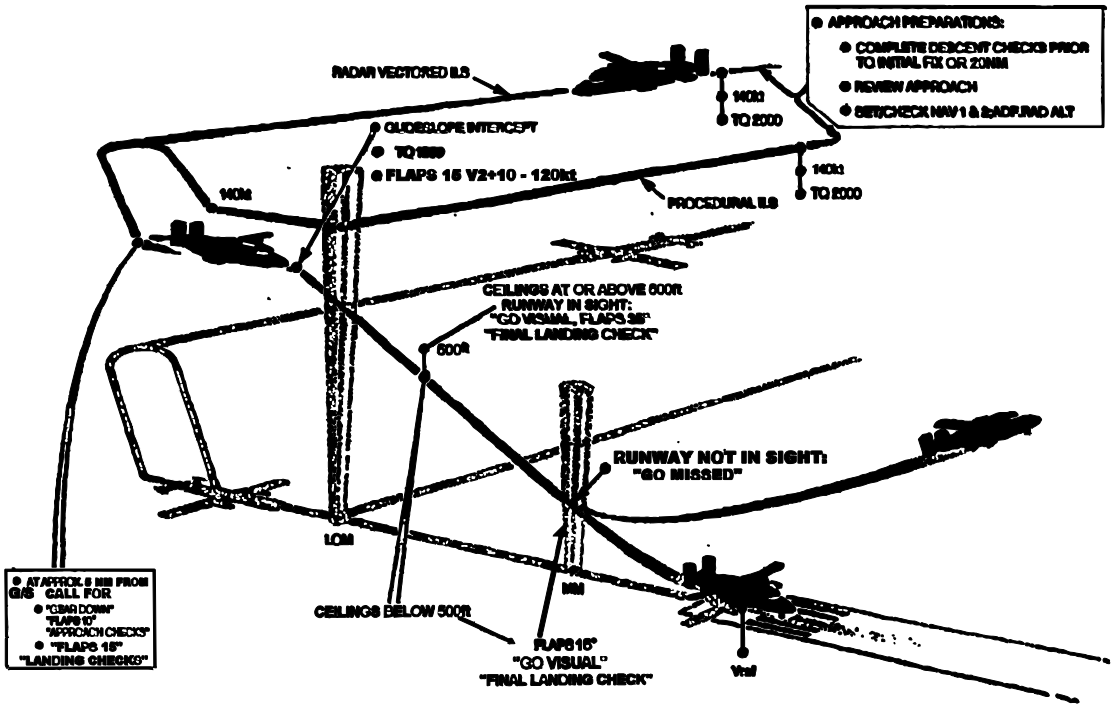
1 dot above or below the glide slope

REFERENCES:
AR 95-1
NGR 95-1
ATC Handbook 7110.65
DOD FLIP
FAR, Part 91
Host Country Regulations
FM 1-240
AFM/Crew Manual

TASK 1215

Perform precision approach.

ILS APPROACH



Task 1220

Perform non-precision approach.

CONDITIONS: In a C-23 or simulator, IMC, or simulated IMC

STANDARDS:

1. Execute approach IAW DOD FLIP, approved instrument procedure, and AR 95-1.

2. Maintain prescribed altitudes ±100 feet.

3. Complete Approach and Landing Checks prior to Final Approach Fix or final descent inbound.

4. Properly operate Flight Director IAW Task 1250 during all approaches.

5. Properly calculate Visual Descent Point if required.

6. Maintain airspeed 120 KIAS, ±10 KIAS.

7. Maintain prescribed courses as follows:

a. NDB courses--±5 degrees.

b. VOR, VOR/DME, RNAV courses, --within half-scale deflection using the course indicator or ±5 degrees using the RMI.

c. LOC, LDA, SDF, FMS courses, remain within half-scale deflection of the CDI.

8. Do not descend below the published minimum descent altitude during approaches or circling unless the parameters of AR 95-1 are met.

9. Adhere to stabilized approach guidelines, maximum bank angle of 30°, rate of descent no greater than 1000 fpm below 500 feet above field elevation. If these parameters are not met at the missed approach point or during the circling maneuver, perform a missed approach.

10. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions

1. The PF's main focus will be inside the aircraft. Prior to starting the approach, the PNF will obtain weather, winds, current altimeter, active runway and remarks from ATIS, AWOS, or ATC, as appropriate. The PF will review the approach procedure with the PNF and calculate a Visual Descent Point (VDP) by using the method in the note below. Normally, passing the initial Approach Fix, or within 10 miles from the final descent point, reduce torque to 2000 and allow the speed to slow to 140-145 KIAS. ATC requirements, however, may require the crew to maintain a higher airspeed. In these instances, there are numerous factors that the crew must consider before accepting such requests including, altitude, weather conditions, procedure, airport familiarity, and crew proficiency. Upon completion of procedure turn inbound, or within 5 miles from the Final Approach Fix when being vectored, complete Approach and Landing Checks, less flaps 35°, and set torque to maintain speed of 120 KIAS. When the PNF sees the approach lighting system, and expects to keep it in sight, he will call **"Approach lights."** When operating in IMC, the PF will remain on instruments until the PNF calls **"Go visual."** If visual

contact is not established at Missed Approach Point, the PNF will say **"Go missed."** The PF will initiate the missed approach using the normal missed approach procedure in Task 1240.

2. The PNF will assist the PF by tuning the appropriate radio frequencies, reading the checklist. The PNF will, as a minimum, make the callouts listed in NOTE 4 as well as any other requested by the PF and making the appropriate callouts for the approach and missed approach, if applicable.

Procedures: For full description of individual type approaches, refer to FM 1-240.

NOTE 1: Autopilot usage at PC's discretion.

NOTE 2: The Flight Director will be used.

NOTE 3: The purpose of computing a visual descent point (VDP) is for situational awareness. To calculate a Visual Descent Point, proceed as follows: For example, if the HAT is 600' and using DME minimums divide HAT by 300. (HAT 600′/300 = 2 DME, VDP is 2NM from the threshold). For timed approaches take 10% of the HAT and subtract that from the time between the FAF and MAP (10% of 600′ HAT = 60 seconds, subtract 60 seconds from time inbound).

NOTE 4: The PNF will make the following callouts:

ALTITUDE

"1000′ above"

"500′ above"

"100′ above"

AT MISSED APPROACH POINT

If criteria in AR95-1 and for stabilized approach met "**Go Visual**"

If criteria in AR95-1 and/or stabilized approach not met "**Go Missed**"

PNF may make "**go visual**" call out any time on the final approach when criteria mentioned above is met and is expected to remain so.

AIRSPEED

±10 KIAS

COURSE DEVIATIONS

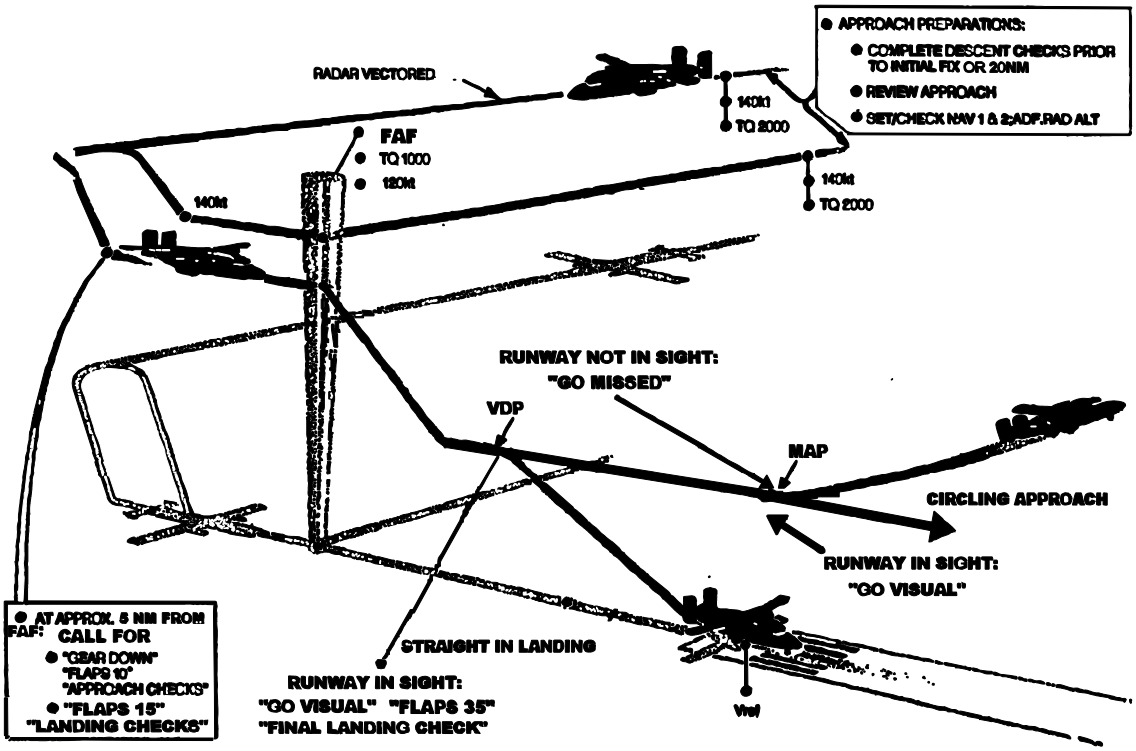
1 dot deviation left or right on HSI

If not VMC by the computed Visual Descent Point on a straight in landings, the crew must consider if they will be in a safe position to land if breaking out beyond the VDP. The decision

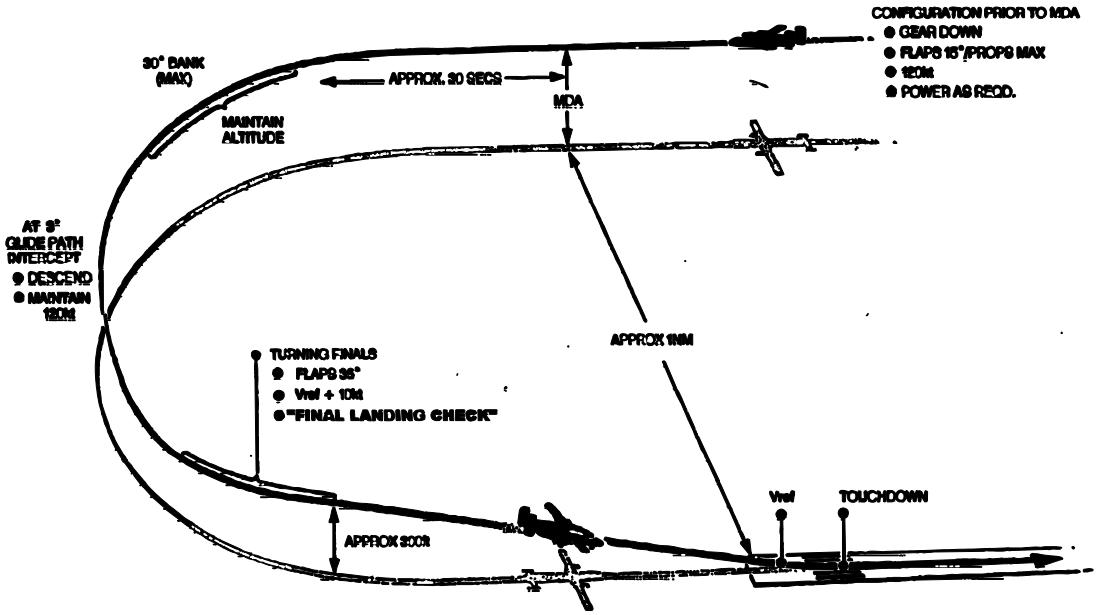
to land will be based on, but not limited to the criteria in AR95-1, runway length, and pilot proficiency.

REFERENCES:
AR 95-1
ATC Handbook 7110.65
DOD FLIP
Host Country Regulations
FM 1-240

NON-PRECISION APPROACH



CIRCLING TO LAND



TASK 1240

Perform missed approach.

CONDITION: In a C-23 or simulator, IMC or simulated IMC.

STANDARD:

1. Comply with ATC or published missed approach procedures at the missed approach point.

2. Maintain prescribed course or heading ±5 degrees.

3. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions

1. The PF's focus will be inside the aircraft. He will apply power to the approximate setting, keeping his main focus on the flight instruments. He will verify the climb out procedure with the PNF and acknowledge all PNF call-outs.

2. The PNF will assist by monitoring engine instruments, adjusting power, and reading the checklist. He will acknowledge all actions requested by the PF.

Procedures. The aviator should make reference to Task 1177, Perform Go-around. Task 1177 and this task are similar in that the aviator is required to reconfigure the aircraft from an approach/landing configuration to a takeoff/climb configuration. The missed approach procedure will be commenced when the aircraft arrives at the Missed Approach Point on the approach procedure, and a landing cannot be completed. Unlike the go-around maneuver, where the maneuver could possibly be executed after flaps have been extended to 35 degrees, the flap setting will not exceed 15 degrees until visual contact with the runway is established and a safe landing is assured. Maneuver the aircraft to follow the missed approach procedure depicted on the approach procedure or the alternate procedure as assigned by ATC. If the approach is terminated while circling for a landing, make a climbing turn toward the runway unless otherwise specified. Remain within the circling obstruction clearance area before turning to intercept the published missed approach course.

PF calls **"Set MTOP, Flaps 15"** and pushes GA button. PNF sets MTOP and selects flaps to 15 if applicable.

PF pitches to V bars.

PNF announces **"Positive Rate"** and PF calls for **"Gear up,"** PNF selects gear up.

PNF sets in Altitude Alerter to missed approach altitude, if not already set.

PF calls for NAV radios to be set. The PNF verifies the NAV radios/FMS is set correctly.

Both pilots set NAV Mode switches, as needed, for missed approach.

When heading bug and courses are set, both pilots set Flight Directors to HDG/NAV as appropriate and select ALT SEL.

Passing 500 feet AGL begin acceleration and reconfiguration as described in task 1104, Normal Takeoff Flaps 15°.

As soon as practical, inform ATC of the missed approach and state intentions for additional ATC clearance. Do not sacrifice aircraft control for the sake of communicating with ATC.

REFERENCES:
AFM/Crew manual
Checklist
FM 1-240
Host Country Regulations
AFM/Crew manual

TASK 1245

Perform unusual attitude recovery.

CONDITIONS: In a C-23, with UT/IP/IE, simulated IMC or in a simulator, with an emergency or full-panel configuration.

STANDARDS:

1. Correctly identify the unusual attitude.

2. Use the correct recovery sequence without exceeding the operating limits of the aircraft.

3. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. The IP, UT, or IE will assume control of the aircraft, clear the area, and establish the unusual attitude. After a positive transfer of controls, he will assume the role of the PNF. In the role of the PNF, he will monitor aircraft and engine instruments closely and provide adequate warning for corrective action if operating limitations may be exceeded. He will assist the PF by performing the requested actions.

The PF's main focus will be inside the aircraft. He will acknowledge transfer of controls, analyze the condition and attitude of the aircraft, and take corrective action.

Procedures. Upon detecting an unusual attitude, the PF, assisted by the PNF, will immediately initiate a recovery to straight- and- level flight by performing the appropriate actions described below.

1. Recover from nose-high unusual attitude; airspeed is low and decreasing—

a. Increase power as necessary up to the maximum power available.

b. Increase angle of bank, not to exceed 45 degrees in the same direction as the turn. If the aircraft is not in a turn or bank then the PF will initiate a bank not to exceed 45 degrees prior to pitching the aircraft nose to the horizon to prevent “unloading” or experiencing negative Gs.

c. As the nose of the aircraft pitches to the horizon, decrease bank to wings level.

d. Adjust pitch to reverse the airspeed trend and return to a level flight attitude.

e. Adjust power to cruise setting.

f. Trim the aircraft.

2. Recover from nose-low unusual attitude; airspeed is fast and increasing—

a. Smoothly reduce power as required.

b. Level the wings.

c. Adjust the pitch up to the horizon.

d. Adjust power to maintain desired airspeed and altitude.

e. Trim the aircraft.

REFERENCES:

AR 95-1
NGR 95-1
FM 1-240

TASK 1250

Perform autopilot/flight director operations.

CONDITIONS: In a C-23 or simulator, VMC, or IMC.

STANDARD:

1. Operate the AP/FD system IAW the appropriate AFM/Crew Manual.

2. Correctly select proper Flight Director inputs appropriate for mode and phase of navigation IAW AFM/Crew Manuals and procedures below.

3. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. Operation of the autopilot is primarily the PF's responsibility. However, to prevent the possibility that the PF might experience vertigo during the after-takeoff climb, the autopilot/flight director should be engaged by the PNF during this segment of flight. Upon request, the PNF will engage the AP mode and call out the action. He will monitor the flight instruments and immediately advise the PF of any abnormal indications. The Flight Director will be used for all flight operations except VFR traffic patterns and other exclusively VFR maneuvers conducted for training.

Procedures. The PF, assisted by the PNF, will perform the following actions:

1. Flight Director Procedures

a. For ITO, select both Flight Directors modes to HDG or NAV-Command Heading Mode and ALT SEL. Set Altitude Alerter to clearance altitude and V bars 10° up.

b. For climbs from cruise flight, first set new altitude in altitude selector window then select ALT. This will cancel the current cruise alt selection. Then press ALT SEL and adjust pitch manually while depressing the Pitch Sync button or use the manual Autopilot pitch control to set the desired pitch. Select IAS to hold airspeed if desired. NEVER use VS mode for climbs.

c. For descents from cruise flight, first set new altitude in altitude selector window then select DSC. DSC cancels the cruise ALT selection, activates DSC mode and arms ALT SEL then gently commands a descent, stabilizing the pitch attitude to achieve 600fpm. Once 600fpm is established VS mode is automatically selected and DSC mode is canceled. If a more immediate descent is required, with new altitude in altitude selector window, select push DSC button two times. Pushing the DSC button the first time cancels the cruise ALT selection, activates DSC mode and arms ALT SEL. Pushing the DSC button the second time cancels the DSC mode leaving only ALT SEL active. This allows the pilot to more rapidly begin the desired descent manually by hand flying, using the pitch sync button or commanding the autopilot via the manual pitch controller. Once the desired vertical speed is attained, select VS or IAS.

d. Lateral course guidance using VHF or FMS navigation sources is achieved via the NAV selection. When using the FMS for navigation, the NAV mode is used for all navigation operations. When using VHF navigation sources, NAV mode can also be used fly radials. The HDG mode can used to maneuver the aircraft by turning the HDG BUG to the desired heading. To intercept VHF courses select HDG and NAV mode. HDG and NAV ARM will be illuminated until the course is captured. After course capture, HDG mode will be cancelled and

ARM will disappear leaving only the NAV mode on. For Flight Director operations during instrument approaches, HDG, B/C and APPR modes are used depending what type of instrument approach is being conducted. HDG mode is used while conducting NDB approaches. B/C mode is used only while conducting Back Course approaches. APPR mode is used to conduct ILS, LOC, VOR and LDA approaches. While being vectored for an ILS approach, use only HDG mode until cleared for the approach, then select APPR mode. If told to intercept and track a LOC course while awaiting clearance for an ILS, use NAV mode until cleared for the ILS approach, then select APPR mode. Upon initial select of APPR mode, HDG and APPR ARM will be displayed until LOC course is captured. Once the LOC is captured, the HDG and ARM annunciation will disappear and GS ARM will illuminate until the Glide Slope is captured. Once the Glide Slope is captured the ARM annunciation will disappear.

2. AUTOPILOT OPERATIONS

a. The autopilot, when selected on, must be monitored continuously to ensure proper operation. Caution must be exercised, as there is no aural warning for autopilot disconnects.

b. When flying in greater than light icing conditions, the autopilot will be disengaged. The autopilot will mask deteriorating control effectiveness.

c. During paradrop operation the autopilot will not be used.

d. The limitations and procedures found in the AFM/Crew Manuals must be adhered to.

REFERENCES:
Manufacturer's handbook
AFM/Crew Manual

TASK 1254

Perform IFR navigation.

CONDITIONS: In a C-23 or simulator using the FMS, VOR, or NDB under VMC, IMC or simulated IMC.

STANDARDS:

1. Correctly program waypoints into the FMS

2. Correctly tune and identify appropriate NAVAIDS.

3. Correctly determine aircraft position.

4. Correctly intercept and maintain desired course.

5. Correctly identify station passage.

DESCRIPTION:

Crew Actions.

1. The PF's main focus (inside/outside the aircraft) will vary depending on whether the aircraft is operating in VMC or IMC. The PF will announce all frequency changes, instrument settings, and ATC information that the PNF does not monitor.

2. The PNF will assist by keeping the area cleared when operating in VMC, checking the avionics equipment, tuning the required frequencies, and performing actions requested by the PF. The PNF will verify all frequency changes requested by the PF, follow the position of the aircraft on the chart, and make the required radio transmissions.

Procedure. The PF, assisted by the PNF, will perform the following procedures:

3. Equipment Check. Check or have the PNF check all radio navigational equipment to be used during the mission. Equipment must be operable and within accuracy tolerances, if applicable, as specified in FM 1-240, the AFM/Crew Manual or equipment manufacturer's manual.

4. Station Identification. Obtain correct frequency for desired navigational station and then tune the equipment. Make a positive identification of the station.

5. Aircraft Position. Determine the position of aircraft with respect to a specified navigational ground station per procedures in FM 1-240. Have the PNF verify the position.

6. Course Interception. After identifying the desired station, determine the location of the aircraft in relation to the desired course. Turn 45 degrees toward the course (90 degrees to expedite). Maintain intercept heading until approaching an on-course indication. Depending on the rate of closure, start a turn to intercept the desired track on course.

7. Course Tracking. Maintain desired heading until navigation instrument shows an off-course condition; then turn 20 degrees toward the course to reintercept. If navigation instruments do not indicate movement toward the course within a reasonable time, increase the intercept angle. When the course is reintercepted, turn toward the course and apply the appropriate drift correction (normally one-half of the intercept angle). Continue to bracket the

course by decreasing corrections until a heading is obtained that will maintain the aircraft on course.

8. Intersection Arrival. Determine arrival at radio intersections per procedures in FM 1-240.

9. Station Passage. Identify VOR station passage by observing reversal of the TO-FROM indicator or reversal of the RMI needle. Identify NDB station passage by observing reversal of the indicator needle.

REFERENCES:
FMS Operators Manual
AR 95-1
NGR 95-1
DOD FLIP
FM 1-240
FAA / Host country regulations
AFM/Crew Manual

TASK 1260

Operate weather avoidance systems

CONDITIONS: In a C-23 under VMC, IMC or simulated IMC

STANDARDS:

1. Correctly test and operate the airborne weather radar according to the equipment instruction booklet and the AFM/Crew Manual.

2. Correctly test and operate the lightning detection system according to the equipment instruction booklet and the AFM/Crew Manual.

3. Correctly perform weather detection, echo interpretation, and hazardous weather avoidance actions according to FM 1-230.

DESCRIPTION:

Crew Actions.

1. The crew will test weather radar and lightning detection systems prior to takeoff for proper operation. The crew will adhere to object and personnel safety distances specified in the AFM/Crew Manual.

2. The operation of weather radar, echo interpretation, and hazardous weather avoidance is the PC's responsibility.

3. The operation of the lightning sensor, interpretation, and hazardous weather avoidance is the PC's responsibility.

REFERENCES:
FM 1-230
Equipment manufacturer's instruction booklet
Aircraft crew manual
FAA Advisory Circular AC 00-24B Thunderstorms
FAA Advisory Circular AC 20-68B Airborne Radar

TASK 1300

Describe or perform emergency procedures.

CONDITIONS: In a C-23, simulator or classroom, with an IP; given a specific emergency.

STANDARD:

RATED: Simulate performing or stating the appropriate emergency procedure IAW the C-23 Manual / checklist

NONRATED: Assist as directed by the PC.

DESCRIPTION:

RATED. Perform or describe the appropriate emergency steps outlined in the AFM/Crew Manuals or checklist. Emergency procedures, which cannot be practiced in the aircraft, will be discussed. Underlined procedures in the emergencies and malfunctions section of the checklist shall be committed to memory.

NONRATED: Tasks may include inspecting for fire, extinguishing fires in cargo compartment, aiding in smoke elimination, locating and pulling circuit breakers, aiding pilots in checklist use, preparing passengers for an emergency landing, and performing emergency egress procedures. Immediately inform the aviator of any emergency condition that you detect. Keep intercommunications to a minimum if the aviator is attempting to communicate outside the aircraft.

REFERENCES:
AFM/Crew manual
Checklist

TASK 1302

Perform procedures for two-way radio failure.

CONDITIONS: In a C-23, or simulator.

STANDARD:

1. Comply with two-way radio failure procedures IAW DOD FLIP.
2. Correctly perform crew coordination actions.

DESCRIPTION: Attempt to reestablish radio communications. Check for proper switch positions on all communications equipment, including the cabin. If unable to reestablish radio communications, comply with lost communication procedures IAW DOD FLIP.

REFERENCES:
DOD FLIP
Host Country Regulations
AFM/Crew manual

TASK 1303

Perform Approaches to stalls and recoveries.

CONDITIONS: In a C-23 or simulator, VMC, above 4000 feet AGL, with an IP.

STANDARDS:

WARNING

Due to the increased risk factor while performing stall recognition training the entry altitude will be no lower than 4,000 feet AGL

1. Correctly configure the aircraft for the particular stall after clearing the training area.
2. Correctly recognize all the indications of an impending stall.
3. Correctly recover in the proper sequence.
4. Recover with a minimum loss of altitude
5. Remain within engine and aircraft limitations prescribed in the AFM/Crew Manual.
6. Maintain heading within ±10 degrees and bank within ±10 degrees.
7. Maintain coordinated flight (ball ¼ out maximum).
8. Correctly perform crew coordination.

DESCRIPTION:

Crew Actions. The IP will brief stall/spin characteristics and correct recovery procedures. The PF will acknowledge the briefing. The PF's main focus will be outside the aircraft. The PNF will monitor flight and engine instruments, keep the aircraft cleared, and perform actions requested by the PF.

Procedures. An imminent stall is one in which the airplane is approaching a stall but is not allowed to completely stall. The approach to stall task is primarily for practice in retaining (or regaining) full control of the airplane immediately upon recognizing that a full stall is likely to occur if timely corrective action is not taken. Perform the recovery at the first indication of the stall by reducing the angle of attack and adding power if available. The PF will set torque at 2000lbs and call for props to be set at 1425rpm before beginning any of the stall profiles. The PF, assisted by the PNF, will perform the following actions:

1. Clean Configuration. Visually clear the area while making a clearing turn. Set torque to 2000 lbs., and propellers to 1700 RPM. Maintain heading and altitude while reducing torque to 1000 lbs. At the first indication of an approaching stall, simultaneously release the elevator backpressure increase power and call **"RTOP, Flaps – 15."** As the aircraft accelerates, continue as described in paragraph d.

2. Turning Configuration Stall. This simulates a stall that might occur after takeoff or during the approach and landing. The PF will obtain V_{ref} for the current aircraft weight by calling for the Descent checks. Configure the aircraft for landing as in Task 1145 but maintain flaps at 15°. Set power to 1000lbs torque, maintain altitude, at 100 KIAS, roll into a 25° angle of bank turn. Hold altitude and bank angle until the first indication of a stall. To recover, the PF

will relax back pressure, level the wings, increase power and call **"RTOP, Flaps - 15"**. As the aircraft accelerates, continue as described in paragraph d.

3. Landing Configuration Stall. This simulates a stall that might occur during the approach and landing. The PF will obtain V_{ref} for the current aircraft weight by calling for the Descent checks. Configure the aircraft for landing as in Task 1145 and selecting Flaps 35°. Set power levers to Flight Idle and maintain altitude until the first indication of a stall, usually the stick shaker. To recover, the PF will simultaneously adjust pitch attitude, advance the power levers and call **"RTOP, flaps – 15."** As the aircraft accelerates, continue as described in paragraph d.

4. Stall recovery. The PF will pitch to a climb attitude and maintain a minimum airspeed of not less than V_{ref}. If the gear is down, the PNF will call **"positive rate,"** when a positive rate of climb is established and the PF will then call **"Gear-Up."** Allow the aircraft to accelerate in a climb. Passing 120 KIAS the PF will call **"Flaps –10."** Passing 125 KIAS, the PF will call **"Flaps-Up."** Passing 130 KIAS, the PF will call **"Climb Power, After Takeoff Checks."** The PNF will retract the flaps as requested and complete the After Takeoff checks as soon as practical.

NOTE 1: The practice of stall recovery and the development of awareness of imminent stalls are of primary importance in training. The objectives in performing imminent stalls are to familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop the habit of taking prompt corrective action. Recovery should be initiated at the first physical indication of a stall. (stick shaker / horn / buffet / loss of control effectiveness / stall "break") During training recovery may be made by climbing to, or maintaining an altitude specified by the IP.

NOTE 2: The preceding scenarios are given for the purpose of standardization and training and evaluations. They do not preclude the IP from using other scenarios to enhance training in stall recognition and recovery. During stall practice, the desired objective is to recognize the approach to a stall and to recover before the aircraft actually stalls. Reducing the angle of attack below the critical angle of attack by reducing the pitch attitude, adding power, and rolling wings level, as appropriate. In the event that the approach to the stall is not detected and the aircraft actually stalls, the recovery procedure may require that the angle of attack be reduced to below level flight attitude to recover from the stalled condition.

NOTE 3: During training the IP may simulate RTOP by using a lower power setting.

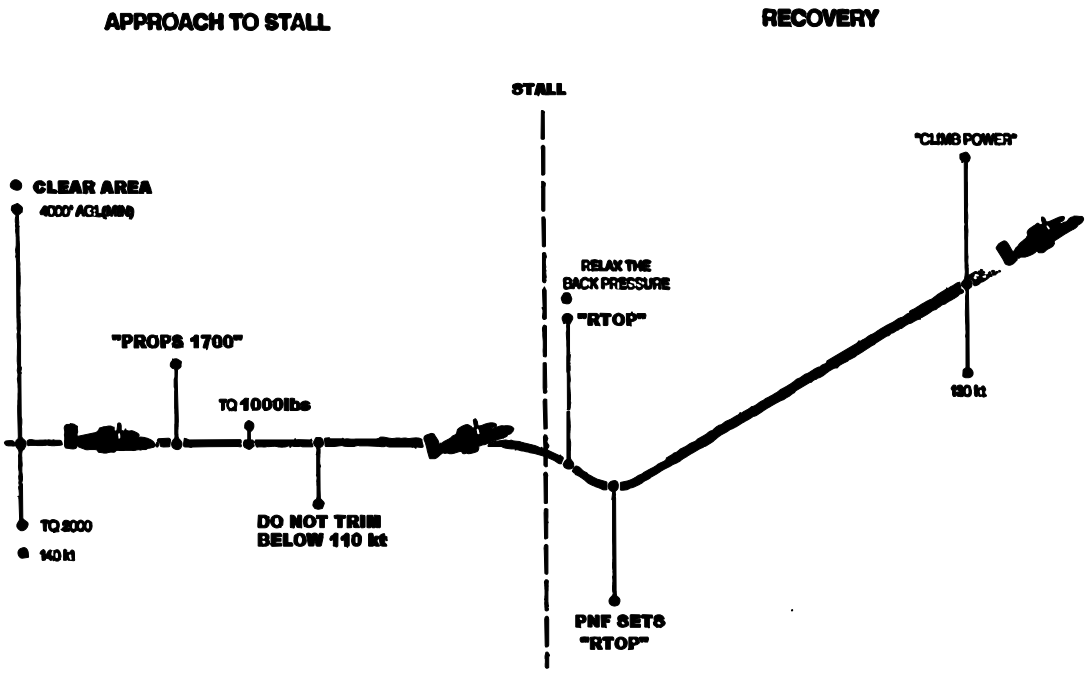
NOTE 4: Practice recovery from a full-stall condition will only be performed in a compatible simulator.

REFERENCES:
FM 1-203
AFM/Crew manual
AC 61-67B: Stall and Spin Awareness Training

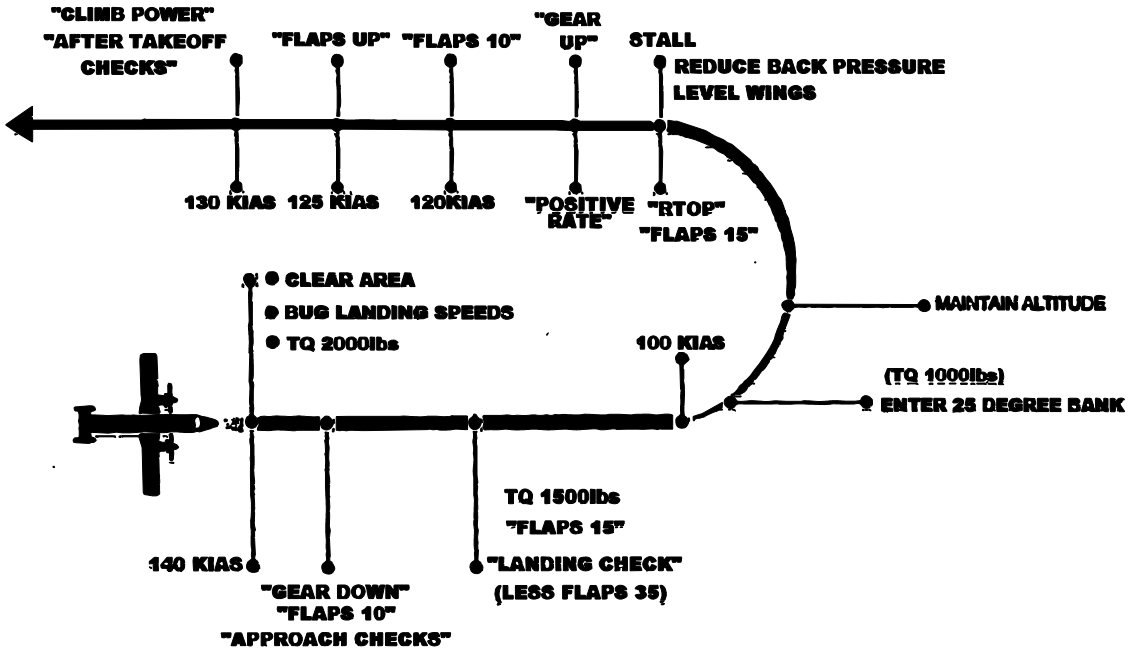
TASK 1303

Perform Approaches to stalls and recoveries

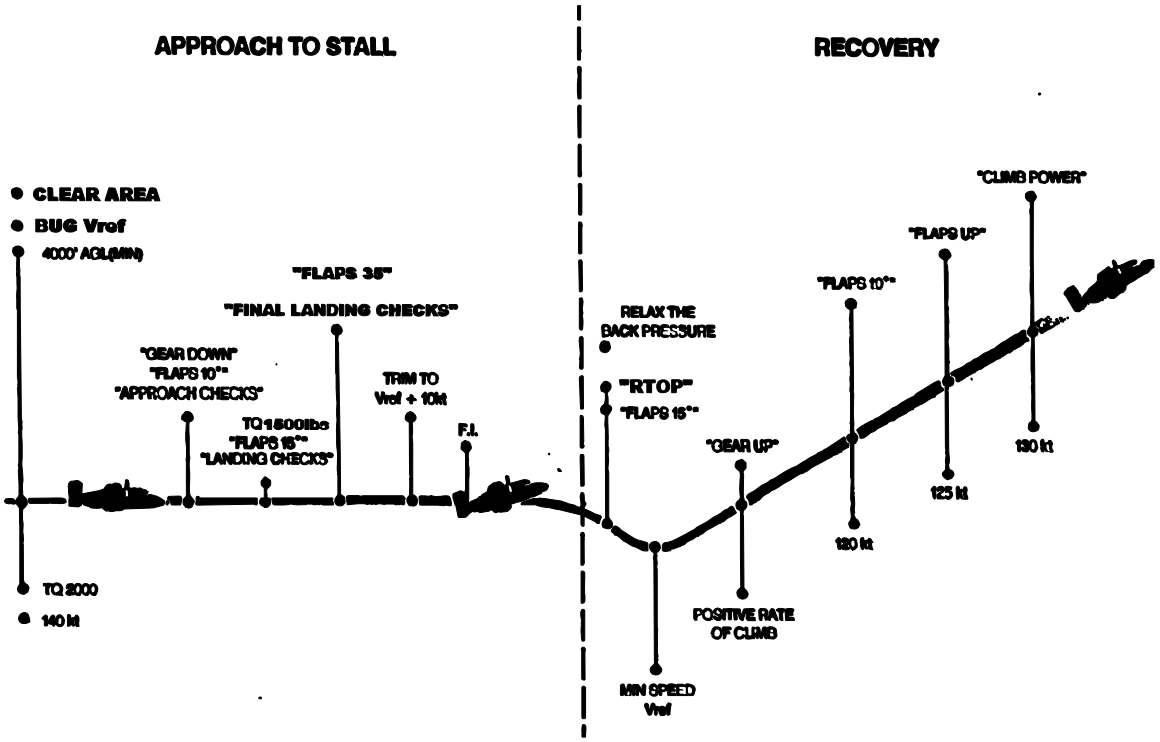
CLEAN CONFIGURATION STALL



FLAPS 15° TURNING CONFIGURATION STALL



FLAPS 35° - LANDING CONFIGURATION STALL



TASK 1310

Perform emergency procedures for engine failure during cruise flight.

CONDITIONS: In a C-23 or simulator, with an IP, VMC or simulated IMC.

STANDARDS:

Rated

1. Maintain heading ±10 degrees (in straight flight).

2. Maintain altitude ±100 feet (If unable, drift down at V_{yse}).

3. Maintain 125 KIAS or above (If unable, select Flaps – 10°).

4. Complete and verify the emergency procedures with the checklist IAW AR 95-1.

5. Correctly perform crew coordination actions.

Nonrated

1. Correctly perform or describe the emergency steps directed by the PC.

2. Correctly perform crew coordination actions.

3. Respond correctly to checklist items.

DESCRIPTION:

Crew Actions. The PF's main focus will be outside the aircraft if VMC. The IP will initiate the maneuver according to the procedures as noted below and complete the required checks or procedures pertaining to the PNF's and FE's crew station. They will also read the checklist and perform all designated PNF and FE actions, such as monitoring flight and engine instruments, and those actions requested by the PF. The FE will visually monitor the failed engine until engine shutdown checks are completed.

Procedures. The crew will perform the following actions:

1. The PF will maintain control of the aircraft while maintaining heading or turn as required.

2. The PF will disengage the autopilot.

3. The PF will call for PNF action, for example, **"Set MRCP"** or **"Set 2000"** as required to keep airspeed from decaying excessively, maintain altitude, and to activate the auto-feather. Call for (MRCP if in level flight).

4. The PF will identify the failed engine by control pressures.

5. The PF will call for crew action by stating **"Verify the left/right engine has failed."** The PNF will verify the failed engine with the engine instruments.

6. The PNF will say **"I verify the left/right engine has/has not failed."**

7. The PF will say **"Confirm left/right engine failure."** The PNF will retard and advance the power lever of the suspected engine to confirm the proper engine has been identified. The PNF responds with **"I confirm the left/right engine has failed."**

8. The FI will say **"smoke/No smoke, fire/No fire, Prop feathered/prop not feathered"**

9. After failed engine is positively identified, call for **"Engine Failure Enroute checks."**

10. While maintaining altitude, if the speed decreases below 125 KIAS the PF will call **"Flaps – 10,"** then **"prop 1700, set MCP,"** then **"bug V_{yse}."**

11. If speed continues to decay, hold altitude with pitch. If speed decreases to V_{yse}, adjust pitch to maintain it and commence drift down at V_{yse} to the altitude to where level flight can be maintained. Initiate an emergency call and plan a landing at the nearest suitable landing area. Perform fuel crossfeed/management procedures as required.

During the emergency, the PF will call out the required steps listed above. The PNF will perform each step only after the PF's verification. The FE will standby to aid the pilots with the verification process during the shutdown procedure, if other duties allow.

NOTE 1: All complete engine shutdowns and simulated engine failure flight training will be conducted IAW AR 95-1 utilizing the following procedures.

1. Simulated engine failure will be initiated by the IP by setting the power lever to idle or fuel lever to off.

2. The PF will complete procedures specified for engine malfunctions, as appropriate, except that fuel flow to the engine will not be interrupted when below 4,000 feet AGL.

3. If below 4,000 feet AGL, the IP will not shutdown the engine in response to a pilot call out, but will simulate a feathered condition by the following zero-thrust procedure:

a. Power Lever - 82% Ng / 500 lbs. Torque.

b. Propeller - 1700 RPM

The FE will perform or describe the appropriate emergency steps outlined in the AFM and Crew Manual or as directed by the PC. Tasks may include inspecting for fire, extinguishing fires in cargo/passenger compartments, aiding in smoke elimination, locating and pulling circuit breakers and aiding pilots in checklist use, preparing passengers for an emergency landing, and performing emergency egress procedures. Immediately inform the PC of any emergency condition that you detect. Monitor and keep intercommunications to a minimum if the aviators are attempting to communicate outside the aircraft.

NIGHT CONSIDERATIONS: The same procedures used for instrument flight should be used at night. Increase cockpit lights or call for PNF action, as required. Ensure positive identification before adjusting switches, condition levers and controls, which are difficult to see at night.

REFERENCES:
AR 95-1
NGR 95-1
AFM/Crew Manual
Checklist

FM 1-203
TC 1-204
Unit SOP

TASK 1315

Perform single-engine landing.

CONDITIONS: In a C-23 or simulator, with an IP, VMC.

STANDARDS:

Rated

1. Maintain heading ±10 degrees.

2. Maintain altitude ±100 feet.

3. Maintain airspeed ±10 KIAS.

4. Perform the appropriate procedures IAW checklist.

5. Complete approach and landing checks no later than designated points during the approach.

6. Maintain 120 KIAS until the landing is assured, then V_{ref} (plus one-half wind gust speed ±5 KIAS).

7. Touchdown on predetermined point, (minus 0, plus 200 feet), with the runway centerline between the main gear.

8. During roll out, apply foreword pressure on control yoke, keep wings level with aileron, maintain runway centerline with rudder until at a taxi speed, then transition to steering tiller.

9. Correctly perform crew coordination actions.

Nonrated

1. Respond correctly to appropriate checklist items.

2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. The PF's main focus will be outside the aircraft. Each crew member will complete the required checks or procedures pertaining to his duties according to the checklist and preflight briefing.

Procedures. The PF, assisted by the PNF, will perform the following actions:

1. Complete Descent Check before entering the traffic pattern or starting instrument approach. Fly a normal traffic pattern, as described in Task 1145, or a normal instrument approach except, make all turns maximum 15º angle of bank, and perform checks at the same point as with both engines operating. Plan for a normal approach with flaps 15° at 120KIAS until there is no possibility of a go-around or missed approach. Flaps 35º should not be extended until the landing is assured. (Landing is assured when a decrease in power or increased drag is required to land on a predetermined touchdown point).

2. Avoid abrupt changes in power and anticipate a yaw as power is reduced. Turn final above 500 feet AGL. When landing is assured, the PF calls **"Flaps 35º, Final Landing Checks, Neutralize rudder trim."** Adjust pitch and power to maintain glide angle and decelerate,

crossing the threshold at 50 feet at V_{ref} plus one-half gust spread. Make a normal touchdown and after touchdown, use brakes as necessary to slow the aircraft. Single engine ground-fine and propeller reversing are not permitted during simulated single engine landings. For this reason, when conducting simulated Single Engine Landings, the PF will resume control of both power levers at touch down concluding the simulated engine failure. During actual single engine landings, ground-fine and propeller reversing must be limited to a rate consistent with directional control. Perform the After-landing procedure when clear of the runway.

NOTE 1: During actual engine failure, the feathered propeller will result in less drag than a windmilling propeller. It may cause the aircraft to float during landing and roll out farther than a normal landing.

NOTE 2: In the event of high gross weight or abnormal conditions, (ice, high altitudes, or high temperatures), during an actual emergency, or when simulated by an IP, the PF may be required to deviate from normal procedures in order to maneuver the aircraft within its performance capabilities. In the event that approach or landing checks are delayed, or interrupted, or gear is retracted after performing the approach or landing checks, the entire approach and landing checks will be completed prior to landing.

NOTE 3: Recommended power settings for training, single engine, are torque 3000 for straight and level, and torque 1500 for descents.

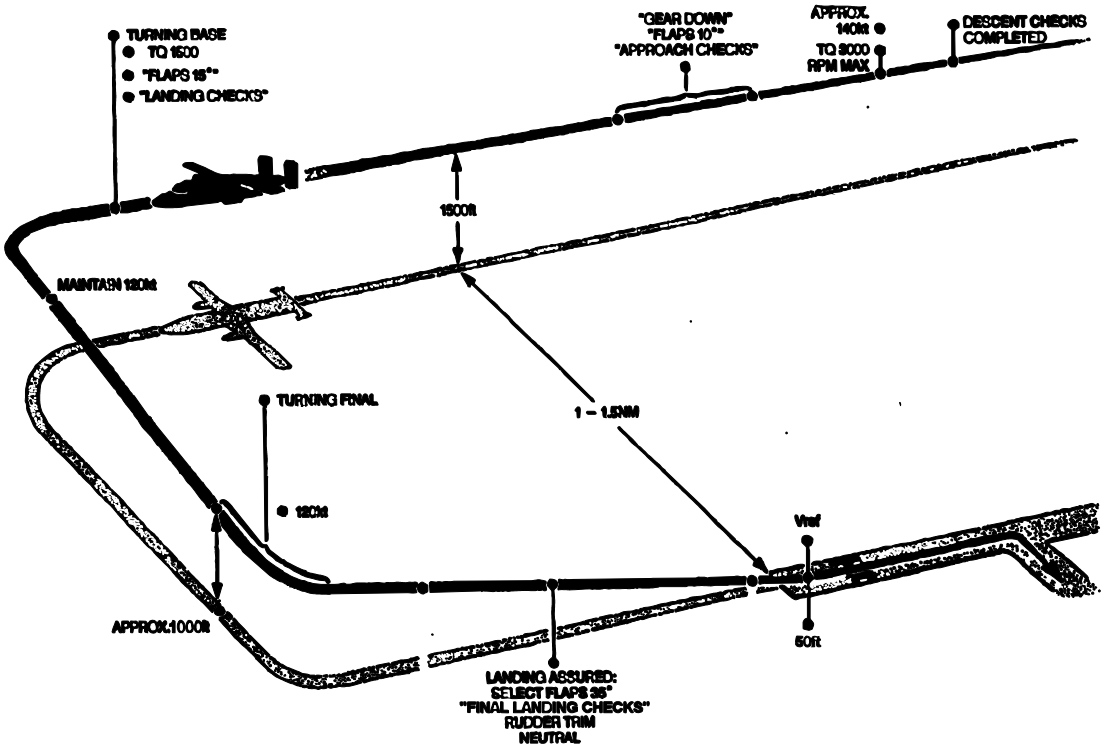
NIGHT CONSIDERATIONS: Normal approach and landing techniques are used at night. When visibility is lowered by haze or smoke, the range of the landing light may be insufficient to see obstructions in time to avoid them. The electronic/visual glideslope indicator should be used as the most accurate and reliable approach-angle indicator. If visual glideslope indicator is not available, the runway lights along with the threshold lights should be used to establish a sight picture during the approach. The apparent distance between runway lights can also be used to judge distance above the runway.

REFERENCES:
AR 95-1
NGR 95-1
AFM/Crew Manual
Checklist
TC 1-204
FM 1-203
Unit SOP

TASK 1315

Perform single-engine landing.

LANDING - ONE ENGINE INOPERATIVE



TASK 1320

Perform single-engine go-around.

CONDITIONS: In a C-23 or simulator, with an IP, VMC.

STANDARDS:

WARNING

A single engine go-around will not be attempted once the flaps are selected to 35°.

Rated

1. Perform single-engine go-around IAW the AFM/Crew Manual.
2. Maintain heading ±10 degrees.
3. Maintain missed approach climb speed of V_2, flaps 15° –0/+5 KIAS.
4. Correctly perform crew coordination actions.

Nonrated

1. Respond correctly to appropriate checklist items.
2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. The PF's main focus will be outside the aircraft. The PNF and FE will monitor flight and engine instruments, keep his area of observation cleared, and perform actions and checks, requested by the PF, pertaining to his duties according to the checklist and preflight briefing.

Procedures. The PF, assisted by the PNF, will perform the following actions:

When it becomes doubtful that a safe landing can be made, the pilot will advance the power levers to a minimum torque of 3000 and call **"RTOP, Flaps 15."** RTOP and flap selection will be set by the PNF. The PF will adjust pitch to the climb attitude required to maintain V_2 (15° flap) (V_{ref} flaps 35° –2 KIAS). When a positive climb rate is achieved, the PNF announces **"Positive Rate."** The PF will call for **"Gear-Up"** and the PNF will retract the gear. The PF will then call for **"After Takeoff Checks."** Maintain RTOP and V_2 - 15° flaps to the five-minute point. At the five minute point bug and accelerate to V_{yse}, and call for **"Flaps 10°, set MCP."** Turns should not be started below single-engine maneuvering altitude.

NOTE 1: The decision to go-around on single-engine must be made as early as possible. Normally, once the flaps have been fully extended on final approach, a go-around should not be attempted.

NOTE 2: If staying in the traffic pattern, maintain power set at RTOP. Upon reaching traffic pattern altitude, (prior to the five minute point) allow the aircraft to accelerate, calling for **"Flaps 10"** passing 120 KIAS. When airspeed stabilizes, not to exceed 140 KIAS, switch reserve power system off, set torque to 3000lbs.

NOTE 3: The purpose of this maneuver is to test the aviator's ability to recognize a condition that would require that the approach be discontinued, and his ability to safely go-around, while in the approach configuration.

NOTE 4: For training purposes the IP may limit go-around power to MTOP.

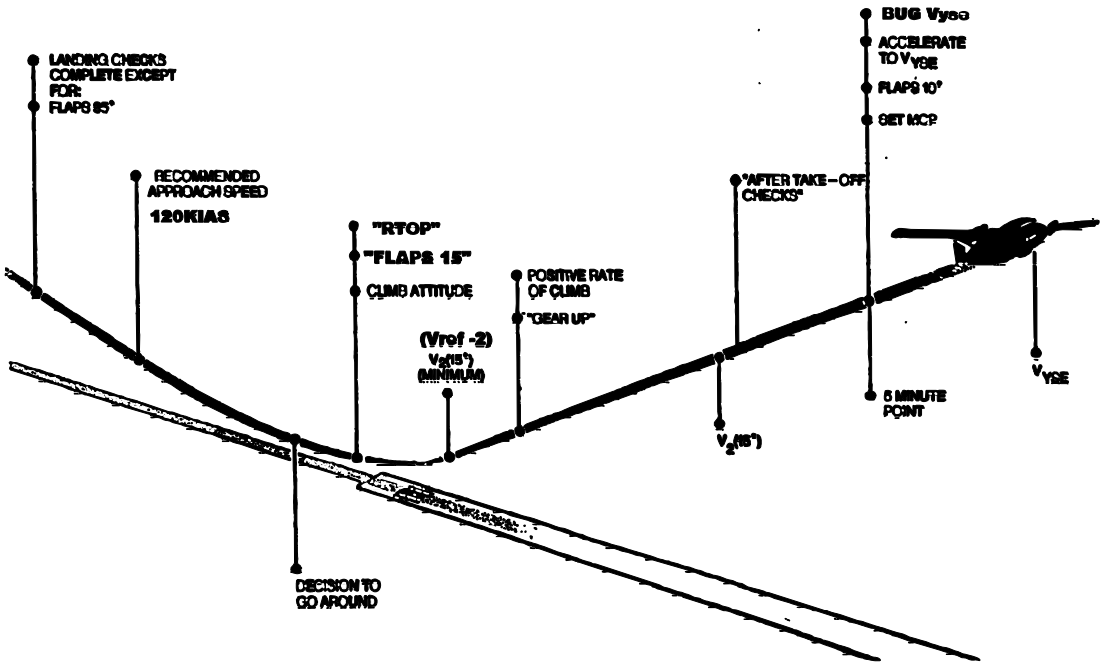
NIGHT CONSIDERATIONS: For traffic avoidance and aircraft identification, the landing lights should be left on until at least traffic pattern altitude. Monitor heading and altitude instruments closely and be prepared to transition to instrument flight if the visual horizon is lost

REFERENCES:
AFM/Crew Manual
Checklist
TC 1-204
FM 1-203

TASK 1320

Perform single-engine go-around.

GO AROUND - ONE ENGINE INOPERATIVE



TASK 1325

Perform emergency procedure for engine failure during takeoff.

CONDITIONS: In a C-23 or simulator, with an IP, VMC.

STANDARDS:

Rated

1. Complete emergency procedures for engine failure during takeoff IAW the AFM/Crew Manual / Checklist.

2. Maintain heading ±10 degrees.

3. Maintain wings level and ball centered.

4. Obtain and maintain V_2 speed –0/+5 KIAS.

5. Complete and verify the procedure with the checklist.

6. Correctly perform crew coordination actions.

Nonrated

1. Correctly perform or describe the emergency steps directed by the PC.

2. Correctly perform crew coordination actions.

3. Respond correctly to the checklist.

DESCRIPTION:

Crew Actions

The PF's main focus will be flying the aircraft. The IP will initiate the engine failure according to the procedures outlined in task 1310. The FE will monitor the failed engine until the engine shutdown checks are complete.

Procedures. The PF, assisted by the PNF and FE, will perform the following actions:

Maintaining control of the aircraft is the primary consideration. Aviators should refer to task 1104, Normal Takeoff, for related data to supplement this task. This task will be specific in nature to engine failure during the takeoff phase of flight. The C-23 is certified under FAR part 25, requiring performance based on calculated V_1 and V_r speeds. Refer to task 1352, Perform Rejected Takeoff for the emergency procedures associated with engine failure prior to the aircraft attaining V_1. This task will deal with the procedure required should the engine fail at or after attaining V_1.

If an engine fails at or above V_1, the pilot will continue the takeoff and rotate when the PNF calls **"Rotate"** passing Vr.

The PF will rotate and adjust pitch to maintain V_2 for the takeoff flap setting. When a positive rate of climb is established, the PNF calls **"Positive Rate."**

The PF will call **"Gear-up, confirm RTOP."** The PNF will select the gear up and confirm RTOP has been automatically set, and if not, will set it manually.

The PNF will respond, **"Gear selected up, RTOP set."** At minimum safe single engine altitude (not below 500 feet AGL):

The PF will identify the failed engine by control pressures.

The PF will call for crew action by stating **"Verify the left/right engine has failed."** The PNF will verify the failed engine with the engine instruments.

The PNF will say, **"I verify the left/right engine has/has not failed."**

The PF will then call **"Engine Malfunction Checks."** The Engine Malfunction at or After V_1 Checks will be carried out by the PNF, confirmed by the PF.

The subsequent procedure will depend on the flap setting used for takeoff.

In circumstances where you will continue to climb beyond the 5 minute point:

1. 10° Flap takeoff. Continue climb at V_2 (10° Flap) to the five-minute point, then accelerate to V_{yse}, switch the reserve power system off, set MCP and if required, continue climb at V_{yse}.

2. 15° Flap takeoff. Continue climb at V_2 (15° Flap) to the five-minute point then accelerate to V_{yse}, select flaps - 10°, switch the reserve power system off, set MCP and continue the climb at V_{yse}.

In circumstances where you will not continue to climb beyond the 5 minute point:

1. 10° Flap takeoff. Continue climb at V_2 (10° Flap) to desired altitude. Maintain power at RTOP. When airspeed stabilizes, not to exceed 140 KIAS, switch reserve power off and set torque to 3000.

2. 15° Flap takeoff. Continue climb at V_2 (15° Flap) to desired altitude. Maintain power at RTOP. Allow the aircraft to accelerate, calling for **"Flaps 10"** passing 120 KIAS. After the airspeed stabilizes, not to exceed 140 KIAS, switch reserve power off, and set torque to 3000.

The FE will perform or describe tasks including, inspecting for fire, extinguishing fires in cargo/passenger compartments, aiding in smoke elimination, locating and pulling circuit breakers, aiding pilots in checklist use, preparing passengers for an emergency landing, and performing emergency egress procedures. Immediately inform the PC of any emergency condition that you detect. Monitor and keep intercommunications to a minimum if the aviators are attempting to communicate outside the aircraft.

NOTE 1: During training, there is nothing to preclude IPs from performing engine failure after takeoff and other critical maneuvers at altitude to demonstrate aircraft characteristics and to practice procedure.

NOTE 2: Only in the most extraordinary circumstances (e.g. failure of the auto feather system, fire, etc.) will it be necessary to carry out the Engine Malfunction checks immediately.

NIGHT CONSIDERATIONS: The crew should monitor heading and altitude instruments closely and be prepared to transition to instrument flight if the visual horizon is lost. For traffic voidance/aircraft identification, the landing lights should be left on at least traffic pattern altitude is reached.

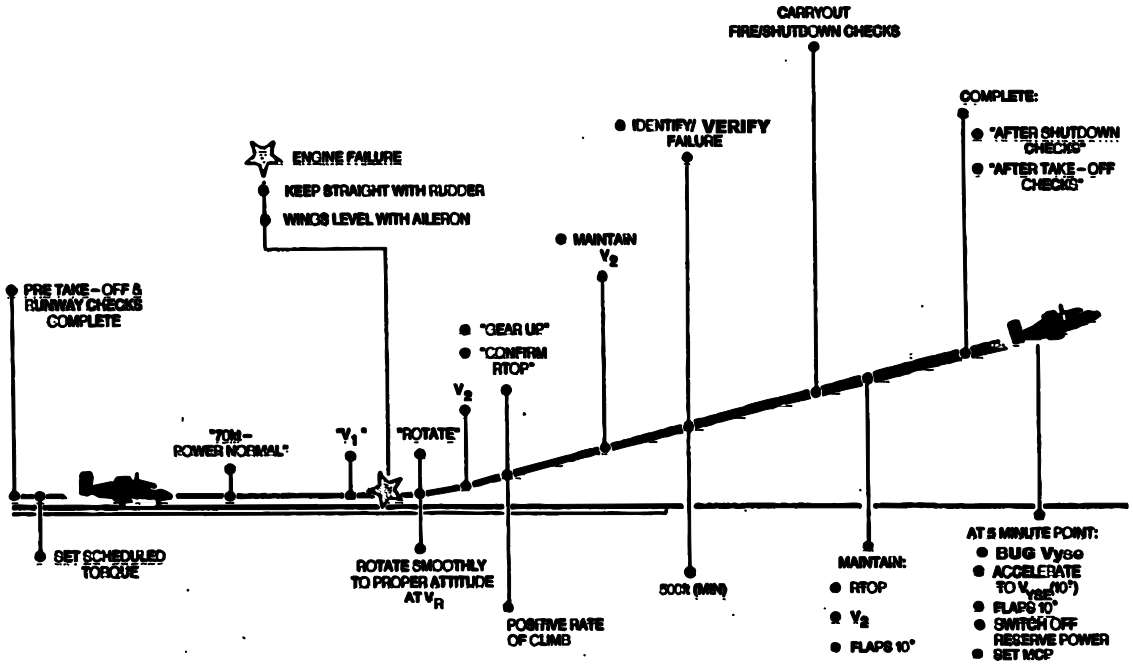
REFERENCES:
AR 95-1

NGR 95-1
AFM/Crew manual
Checklist
TC 1-204
Unit SOP

TASK 1325

Perform emergency procedure for engine failure during takeoff.

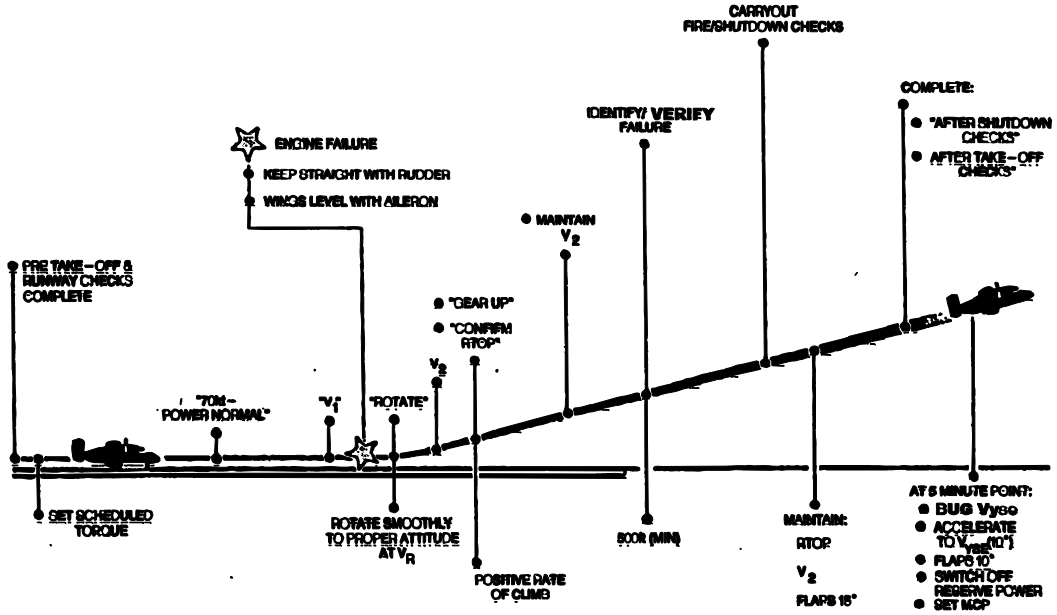
FLAPS 10° TAKEOFF - ENGINE FAILURE AFTER V_1



TASK 1325

Perform emergency procedure for engine failure during takeoff.

FLAPS 15° TAKEOFF - ENGINE FAILURE AFTER V_1



TASK 1335

Perform emergency procedures for engine failure during final approach.

CONDITIONS: In a C-23 or simulator, with an IP, VMC, or simulated IMC.

STANDARDS:

Rated

1. Perform emergency procedures for engine failure during final approach IAW the AFM/Crew Manual/Checklist.

2. Complete and verify the procedure with the checklist.

3. Maintain heading ±10 degrees.

4. Maintain wings level and ball in center.

5. Maintain airspeed (V_{ref} plus one-half gust speed) ±5 KIAS.

6. Correctly perform crew coordination actions.

Nonrated

1. Correctly perform or describe the emergency steps directed by the PC.

2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. The PF's main focus will be flying the aircraft. The PNF should also assist the PF by monitoring engine instruments, advising the PF of any abnormal indications, and performing actions requested by the PF. The FE, if time and altitude permit, will monitor the failed engine until the engine shutdown checks are complete.

Procedures. The PF, assisted by the PNF, will perform the following actions:

Maintaining control of the aircraft is the primary consideration. Continue approach to landing as outlined in TASK 1145, maintaining aircraft control and computed approach speed. The distance from the runway at which the engine fails will determine the extent of the corrective procedures applied.

The PF will add power, as necessary, to maintain airspeed and approach angle. If the position is far enough from the runway, the power application may activate the Auto-Feather. The PF will call **"Confirm gear, flaps and rudder trim neutral."**

The PNF will respond with **"Gear up/down, Flaps up/10/15/35,"** as applicable.

On short final verify the rudder trim neutral.

If conditions require it or time permits, perform Engine Shutdown Checks.

NOTE 1: Final approach is understood to be a position from the final turn where time does not permit a complete engine failure procedure.

NOTE 2: For procedures used to simulate engine failures, refer to the note following Task 1310.

NIGHT CONSIDERATIONS: Use a normal approach and landing technique. Do not allow the aircraft to descend below normal glide path. The ILS G/S, VASI, PAPI, etc when available, is the most accurate and reliable approach/angle indicator and will be used to maintain a safe glide path.

REFERENCES:
AR 95-1
NGR 95-1
AFM/Crew Manual
FM 1-203
TC 1-204

TASK 1352

Perform rejected takeoff

CONDITIONS: In a C-23 or simulator, with an IP

STANDARDS:

1. Review malfunctions that would be a cause for a rejected takeoff prior to V_1.
2. Safely stop the airplane on the remaining runway.
3. Maintain centerline between the main landing gear.

DESCRIPTION:

Crew Actions. The PF's main focus will be flying the aircraft. The IP will perform normal PNF duties and callouts.

Procedure.

Several common reasons to reject a takeoff are:

Engine malfunction

Fire annunciator illuminates

Flat tire

Smoke/smell in the cockpit

Autofeather not armed

Cargo shift

There may be other reasons that units may deem critical enough for a rejected takeoff. They should be addressed as an SOP item. The PC may state "standard abort criteria" in the departure briefing if all items are included in the SOP.

WARNING

Initiating a rejected takeoff by reducing a power lever or placing a fuel lever in the off position is prohibited.

During the takeoff roll the IP will initiate the rejected takeoff by announcing, **"Abort, Abort, Abort."**

The PF will bring both power levers to idle and safely stop the airplane using braking and ground fine/reverse, as applicable and controllable.

NIGHT CONSIDERATIONS: Aviators should be aware of runway remaining and runway end lights.

REFERENCES:
AR 95-1
NGR 95-1
AFM/Crew Manual
FM 1-203

TASK 1800

Perform after-landing checks.

CONDITIONS: In a C-23 or simulator.

STANDARD:

Rated

1. Use checklist IAW AR 95-1.
2. Correctly perform crew coordination actions.

Nonrated

1. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions

The PF will focus his attention primarily outside the aircraft while it is moving. After exiting the active runway, the PF will call for the After Landing Checks. Each crewmember will complete the required checks or procedures pertaining to his crew duties according to the checklist.

Procedures. The PC, assisted by the crew, will perform the following actions:

Accomplish after-landing actions, as required, to include shutdown checks and long term parking checks, if appropriate, by the checklist.

NIGHT CONSIDERATIONS: Due to the restricted visibility at night, taxi speeds should be reduced to allow for a greater margin of safety. Outside guidance should be requested whenever taxiing in areas where obstacles are difficult to see. Avoid shining the taxi/landing light into other aircraft cockpits or ground guide's eyes.

REFERENCES:
AR 385-95
AR 95-1
DA Pamphlet 738-751
Checklist
AFM/Crew manual

TASK 2001

Perform or describe paradrop operations.

CONDITIONS: In a C-23, rigged for paradrop, VMC, day or night, with a jumpmaster.

STANDARDS:

Rated

1. Maintain desired ground track over the drop zone.

2. Maintain altitude ±100 feet.

3. Maintain airspeed + 10, - 0 KIAS.

4. Properly conduct all appropriate briefings.

5. Ensure aircraft is properly rigged for the mission.

6. Correctly perform crew coordination actions.

Nonrated

1. Ensure the aircraft is properly rigged and prepared for the mission per the AFM/Crew Manuals and unit SOP.

2. Operate ramp door in accordance with the AFM supplement

3. Correctly conduct the safety brief for all jumpers per the crewmember's checklist.

4. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions

Each crewmember will complete the required checks or procedures pertaining to his crew station according to the checklist and the preflight briefing.

Procedures

Rated:

The PC will brief the crewmembers, jump master, and parachutists. Ensure the aircraft is properly rigged as per the AFM/Crew manual and additional guidance from NGB. On final to the drop zone, maintain altitude, airspeed, and ground track as determined by the pre-mission planning. Set props to 1700 RPM and flaps to 15 degrees when speed permits. Maintain airspeed between 100 and 110 KIAS throughout the operation. Once the aircraft is configured, the FE will open the ramp and the left aft door. All turns should be made with wings level to enable the jumpmaster to monitor the approach to the drop zone. Six minutes prior to drop, turn on the red paradrop light and at night ensure the cockpit doors are closed. Thirty seconds, or as briefed, prior to drop, and after receiving clearance from the proper authority, turn on the green paradrop light. Ensure the FE or the safety person retrieves the static lines as soon as the last parachutist or bundle has cleared the aircraft. Instruct the FE to close the ramp and left side door before accelerating and configuring the aircraft for cruise flight. Refer to Military Supplement 1 of the AFM for detailed limitations, procedures and information.

Nonrated:

The FE will assist with the jump briefing prior to the mission. He will ensure the cabin is clean, dry and clear of obstructions. The FE will properly install the static line anchor cable retriever per the AFM and Crew Manuals. Pad and tape all clamps on the cable with cellulose wadding and masking tape. He will rig the troop seats for the mission, secure loads, and compute weight and balance. The FE will obtain information from the jumpmaster concerning the number of parachutists in each load and the approximate time required for each jump. When directed by the PC, operate the ramp door, and the left entrance door. Inform the jumpmaster when ready. If the jumpmaster cannot communicate directly with the FE, use the hand and arm signals described in TC 57-1 to communicate with the jumpmaster. Relay information quickly and accurately to the PC. Recover static lines after the last parachutist has cleared the aircraft. Recover "D" bags and retrieve a hung jumper, if necessary.

WARNING

For static line operations, a safety observer or additional flight engineer is required to be on board, in case of an emergency such as a hung jumper. The flight engineer and safety observer must wear a safety harness anytime the cargo ramp or side spotting doors are open in flight. It is assumed that the jumpmaster will wear a parachute and exit with the parachutists. When parachutists are equipped with automatic parachute openers and the mission is aborted, ensure the openers are disarmed before beginning a descent.

NOTE 1: With the obvious difference of retrieving static lines, military free-fall and static line operations from over the ramp or left side door are performed in an almost identical manner.

NOTE 2: It may be easier to open doors with the bleed air system off.

NIGHT CONSIDERATIONS: Instrument lights should be adjusted to obtain maximum outside visibility while allowing for easy transition to instrument flight.

REFERENCES:
AR 95-1
NGR 95-1
FM 57-220
TC 1-201
TC 57-1
TM 10-1670-201-23
AFM/Crew manual / AWR
Unit SOP

TASK 2026

Perform or discuss mountain operation.

CONDITIONS: In a C-23, under VMC, IMC, or simulated IMC, or in a classroom environment.

STANDARDS:

1. Correctly perform or describe the appropriate procedures according to the listed references.

2. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. The PC will ensure that the crew is familiar with mountain-flying hazards.

Procedures. The PF, assisted by the PNF, will perform the following actions:

Preflight. Complete a detailed performance evaluation to determine if any operating limitations will be encountered.

Starting engines. Use normal starting procedures.

Taxiing. Use normal taxiing procedures.

Takeoff. Use normal takeoff procedures.

NOTE: Many mountain landing strips or runways are not level. Complete performance planning for current ambient conditions and runway slope to determine the safest departure direction.

During flight. Use normal procedures. Be alert for clear air turbulence that may be encountered because of uneven terrain and wind variations.

Landing. Use normal landing procedures.

NOTE: Many mountain landing strips or runways are not level. Unless local conditions dictate otherwise, always land uphill.

Before leaving the aircraft. Use normal procedures. Ensure that the aircraft is properly secured. In mountainous areas, the possibility of severe and rapidly changing weather is greater than normal.

REFERENCES:
AFM/Crew manual
FM 1-230

TASK 2029

Perform or discuss high altitude flight.

CONDITIONS: In a C-23, with an IP, under VMC, IMC, or simulated IMC, or in a classroom environment.

STANDARDS:

Rated

1. Select and use the appropriate flight publications for the route structure flown.

2. Inspect equipment IAW AFM/Crew Manual and use oxygen equipment as prescribed in AR 95-1.

3. Perform oxygen pre-breathing procedures IAW AR 95-1 for flights above flight level 180.

4. Ensure passenger briefing, if appropriate is completed using the checklist. Stress high altitude procedures.

5. Use appropriate altimeter settings IAW FLIP.

6. Monitor crew and passengers for symptoms of hypoxia or decompression sickness.

7. Correctly perform crew coordination actions.

Nonrated

1. Correctly manage O_2 operations.

2. Monitor crew and passengers for symptoms of hypoxia or decompression sickness.

3. Correctly perform crew coordination actions.

DESCRIPTION:

Crew Actions. Each crewmember will complete the required checks or procedures pertaining to his crew duties according to the checklist and the preflight briefing.

Procedures. The PF, assisted by the PNF and FE, will perform the following actions:

Secure needed flight publications for high and low route structure. Inspect the aircraft oxygen system IAW the AFM/Crew Manual. Check pressure, regulator, indicator, connections, and emergency oxygen flow (PRICE Check). Ensure that sufficient oxygen is available for crew and passengers. Commence using oxygen at altitudes as specified in AR 95-1. For flights above FL 180, pre-breathe 100 percent oxygen commencing 30 minutes prior to takeoff. Set altimeter to height above mean sea level (QNH) until passing through the transition altitude, then set to 29.92 inches of mercury which is the height above standard datum plane (QNE). Reset to QNH when descending through the transition level (lowest flight level available for use). During passenger briefings, stress procedures and precautions that differ from low-altitude flight. Crew and passengers should be monitored for signs of hypoxia or decompression sickness.

REFERENCES:
AR 95-1
NGR 95-1

DOD FLIP
FM 1-301
AFM/Crew manual

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Chapter 5

Maintenance Test Flight

Does not apply to C-23.

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Chapter 6

CREW COORDINATION

This chapter describes the crew coordination elements, basic qualities, and objectives, as found in the Army Aircrew Coordination Training Program.

6-1. CREW COORDINATION BACKGROUND

An analysis of U.S. Army aviation accidents revealed that a significant percentage resulted from one or more crew coordination errors committed before or during the mission flight. Often an accident was the result of a sequence of undetected crew errors that combined to produce a catastrophic result. Additional research shows that even when accidents are avoided, these same errors could result in degraded mission performance. A systematic analysis of these error patterns identified specific areas where crew-level training could reduce the occurrence of such errors and break the error chain leading to accidents and poor mission performance.

6-2. CREW COORDINATION ELEMENTS

Broadly defined, aircrew coordination is the interaction between crewmembers necessary for the safe, efficient, and effective performance of tasks. The essential elements of crew coordination are:

a. Communicate positively. Good cockpit teamwork requires positive communication among crewmembers. Communication is positive when the sender directs, announces, requests, or offers information; the receiver acknowledges the information; the sender confirms the information, based on the receiver's acknowledgment or action.

b. Direct assistance. A crewmember will direct assistance when he cannot maintain aircraft control. He will also direct assistance when he cannot properly operate or troubleshoot aircraft systems without help from the other crewmember.

c. Announce actions. To ensure effective and well-coordinated actions in the aircraft, all crewmembers must be aware of the expected movements and unexpected individual actions. Each crewmember will announce any actions that affect the actions of the other crewmember.

d. Offer assistance. A crewmember will provide assistance or information that has been requested. He also will offer assistance when he sees that another crewmember needs help.

e. Acknowledge actions. Communications in the aircraft must include supportive feedback to ensure that crewmembers correctly understand announcements or directives. Be explicit. Crewmembers should use clear terms and phrases and positively acknowledge critical information. They must avoid using terms that have multiple meanings, such as “Right,” “Back up,” or “I have it.” Crewmembers must also avoid using indefinite modifiers such as, “Do you see that?” or “You are coming in a little slow.”

f. Provide aircraft control and obstacle advisories. Although the PF is responsible for aircraft control, the other crewmember may need to provide aircraft control information regarding airspeed, altitude, or heading. Coordinate action sequence and timing. Proper sequencing and timing ensure that the actions of one crewmember mesh with the actions of the other crewmember.

6-3. CREW COORDINATION BASIC QUALITIES

The crew coordination elements are further broken into a set of 13 basic qualities. Each basic quality is defined in terms of observable behaviors. The paragraphs below summarize these.

a. Flight team leadership and crew climate are established and maintained. This quality addresses the relationships among the crew and the overall climate of the flight deck. Aircrews are teams with a designated leader and clear lines of authority and responsibility. The PC sets the tone for the crew and maintains the working environment. Effective leaders use their authority but do not operate without the participation of other crewmembers. When crewmembers disagree on a course of action, they must be effective in resolving the disagreement.

b. Premission planning and rehearsal are accomplished. Premission planning includes all preparatory tasks associated with planning the mission. These tasks include planning for VFR or IFR flight. They also include assigning crewmember responsibilities and conducting all required briefings and back briefs. Premission rehearsal involves the crew collectively visualizing and discussing expected and potential unexpected events for the entire mission. Through this process, all crewmembers think through contingencies and actions for difficult segments or unusual events associated with the mission and develop strategies to cope with contingencies.

c. Appropriate decision-making techniques are applied. Decision-making is the act of rendering a solution to a problem and defining a plan of action. It must involve risk assessment. The quality of decision making and problem solving throughout the planning and execution phases of the mission depends on the information available, time constraints, and level of involvement and information exchange among crewmembers. The crew's ability to apply appropriate decision-making techniques based on these criteria has a major impact on the choice and quality of their resultant actions. Although the entire crew should be involved in the decision-making and problem solving process, the PC is the key decision maker.

d. Actions are prioritized and workload is equitably distributed. This quality addresses the effectiveness of time and workload management. It assesses the extent to which the crew, as a team, avoids distractions from essential activities, distributes and manages workload, and avoids individual task overload.

e. Unexpected events are managed effectively. This quality addresses the crew's performance under unusual circumstances that may involve high levels of stress. Both the technical and managerial aspects of coping with the situation are important.

f. Statements and directives are clear, timely, relevant, complete, and verified. This quality refers to the completeness, timeliness, and quality of information transfer. It includes the crew's use of standard terminology and feedback techniques to verify information transfer. Emphasis is on the quality of instructions and statements associated with navigation, obstacle clearance, and instrument readouts.

g. Mission situational awareness is maintained. This quality considers the extent to which crewmembers keep each other informed about the status of the aircraft and the mission. Information reporting helps the aircrew maintain a high level of situational awareness. The information reported includes aircraft position and orientation, equipment and personnel status, environmental and battlefield conditions, and changes to mission objectives. Awareness of the situation by the entire crew is essential to safe flight and effective crew performance.

h. Decisions and actions are communicated and acknowledged. This quality addresses the extent to which crewmembers are kept informed of decisions and actions by another crewmember. Crewmembers should respond verbally or by appropriately adjusting their behaviors, actions, or control inputs to clearly indicate that they understand when a decision has been made and what it is. Failure to do so may confuse crews and lead to uncoordinated operations.

i. Supporting information and actions are sought from the crew. This quality addresses the extent to which supporting information and actions are sought from the crew by another crewmember, usually the PC. Crewmembers should feel free to raise questions during the flight regarding plans, revisions to plans, actions to be taken, and the status of key mission information.

j. Crewmember actions are mutually cross-monitored. This quality addresses the extent to which a crew uses cross monitoring as a mechanism for breaking error chains that lead to accidents or degraded mission performance. Crewmembers must be capable of detecting each other's errors. Such redundancy is particularly important when crews are tired or overly focused on critical task elements and thus more prone to make errors.

k. Supporting information and actions are offered by the crew. This quality addresses the extent to which crewmembers anticipate and offer supporting information and actions to the decision maker, usually the PC, when a decision must be made or an action taken.

l. Advocacy and assertion are practiced. This quality concerns the extent to which crewmembers are proactive in advocating a course of action they consider best, even when others may disagree.

m. Crew-level after-action reviews are conducted. This quality addresses the extent to which crewmembers review and critique their actions during or after a mission segment, during periods of low workload, or during the mission debriefing.

6-4. CREW COORDINATION OBJECTIVES

The crew coordination elements and basic qualities are measured to determine if the objectives of the crew coordination program have been met. The objectives of the program have been defined by five crew coordination objectives. They are:

a. Establish and maintain team relationships. Establish a positive working relationship that allows the crew to communicate openly and freely, and to operate in a concerted manner.

b. Mission planning and rehearsal. Explore, in concert, all aspects of the assigned mission and analyze each segment for potential difficulties and possible reactions in terms of the commander's intent.

c. Establish and maintain workloads. Manage and execute the mission workload in an effective and efficient manner with the redistribution of task responsibilities as the mission situation changes.

d. Exchange mission information. Establish intra-crew communications using effective patterns and techniques that allow for the flow of essential data between crewmembers.

e. Cross-monitor performance. Cross-monitor each other's actions and decisions to reduce the likelihood of errors impacting mission performance and safety.

6-5. STANDARDIZED COCKPIT PROCEDURES

a. General: The intent of clearly defining a division of cockpit responsibilities is to ensure that duties that may distract the pilot flying (PF) are transferred to the pilot not flying (PNF). Clear division of cockpit responsibilities is of particular importance during the arrival and departure phases of flight. The following serves as a guide.

b. PF responsibilities. The PF is responsible for flying the aircraft. If the autopilot is coupled, the PF is responsible for ensuring that the autopilot correctly captures and maintains selected altitudes and courses. Unless required by a safety consideration, the PF shall avoid tasks that distract from the primary responsibility of flying the aircraft by directing the PNF to accomplish these tasks. As a general rule, if the PNF can do it, the PNF should do it, particularly during the departure and arrival phases. It is the PF's responsibility to manage the workload placed upon the PNF during periods of high cockpit workload.

c. PNF responsibilities. The PNF is responsible for cross-monitoring the PF and for accomplishing tasks that may distract the PF from his duties. The primary duty of the PNF is to keep the PF free to simply fly the airplane. Basic PNF duties include:

(1) Radio communications.

(2) Change NAVAID and communications radio frequencies.

(3) Change transponder codes

(4) Copy clearances, ATIS, and other information.

(5) Read and complete checklist items as required.

(6) Set, adjust pages, switches and systems as required.

(7) Operate the FMS/onboard navigational system at the direction of the PF.

(8) Change aircraft configuration at the direction of the PF, such as:

(a) Power and propeller settings.

(b) Flap selection.

(c) Operating the gear handle.

(9) Operate the weather avoidance equipment.

(10) Set and arm altitude on the altitude alerter (if installed).

(11) During IFR operations.

(a) Note takeoff time.

(b) Calculate and monitor times for holding and approaches.

(c) When on approach, watch for the runway environment.

(d) Be prepared to direct and assist the PF with the missed approach procedure, if required.

d. Checklists. The PNF and PF will use the "challenge, response and response" method of reading the checklist. This is the most positive way to proceed through a checklist as it allows for both pilots to remain aware of all checklist related activities. Flexibility with this method is

required. During periods of high cockpit workload (taxiing, departure or takeoff, traffic pattern, descent and during approaches) the PF may not be able to respond in a quick and positive manner. As a result, the benefits of the challenge and response do not justify the additional workload it places on the PF. Under these circumstances the checklist should still be read aloud; however, the PNF now also provides the response. The PNF should only accomplish non-critical functions with command or acknowledgment. The operation of systems such as landing gear, flaps, autopilot, FMS and flight director mode selections require PF participation mandating a response of "confirmed."

6-6. STERILE COCKPIT.

The definition of a sterile cockpit is, "only that conversation required for safe aircraft operation." A sterile cockpit shall exist –

a. During taxi.

b. From the start of the take-off run through the climb to the en route phase of flight.

c. From he en route phase of flight, into the terminal area for the approach and landing.

6-7. TWO-CHALLENGE RULE.

The two-challenge rule allows one crewmember to automatically assume the duties of another crewmember who fails to respond to two consecutive challenges or when aircraft control is in question. For example, the PF becomes fixated, confused, task overloaded, or otherwise allows the aircraft to enter an unsafe position or attitude. The PNF first asks the PF if he is aware of the aircraft position or attitude. If the PF does not acknowledge this challenge, the PNF issues a second challenge. If the PF fails to acknowledge the second challenge, the PNF assumes control of the aircraft.

6-8. STANDARD CREW TERMINOLOGY.

To enhance communication and crew coordination, crews should use words or phrases that are understood by all participants. They must use clear, concise terms that can be easily understood and complied with in an environment full of distractions. Multiple terms with the same meaning should be avoided. DOD FLIP and FAA Pilot/Controller Glossary, contain standard terminology for radio communications. AFM / Crew Manual contain standard terminology for items of equipment.

6-9. CREW COORDINATION CALLOUTS

a. Takeoff. These callouts apply to a normal and instrument takeoff.

	PF	**PNF**
	Sets power minimum of 2000 ft/lbs.	
Call	"Set MTOP"	Sets MTOP

	Moves hand from tiller to control yoke.	
Call	"My controls"	
Response		"Your controls"

	Approaching 70 KIAS	
Call		"70 knots"

	Approaching V_1	
Call		"V_1"
PF moves hand from throttles to control yoke.		

	Approaching V_r	
Call		"Rotate"
	PF rotates to 10° pitch attitude.	

	Positive Rate of Climb	
Call		"Positive rate"
Response	"Gear up"	Retract the landing gear

	Passing 120 KIAS (if flaps 15° takeoff)	
Call	"Flaps 10"	Select flaps 10°

	Passing 125 KIAS	
Call	"Flaps up"	Select flaps up

	Passing 130 KIAS	
Call	"Climb power, After-takeoff checks"	Set power, complete checks when practical.

b. Climb, cruise and descent.

(1) The PNF will set the assigned altitude on the preselect and state **"6000 set."** The PF will respond by at least reading the altitude number back. For example, **"6000 set / armed."**

(2) Approaching 500 feet prior to an assigned altitude, either crewmember will state **"500 to go."** The other crewmember will respond **"500 to go."**

c. Go-around.

	PF	**PNF**
	Sets power approximately 3000 ft/lbs.	
Call	"MTOP, Flaps 15"	Sets MTOP, selects flaps 15°

	Positive Rate of Climb	
Call		"Positive rate"
Response	"Gear up"	Retract the landing gear

	Passing 120 KIAS	
Call	"Flaps 10"	Select flaps 10°

	Passing 125 KIAS	
Call	"Flaps up"	Select flaps up

	Passing 130 KIAS	
Call	"Climb power, After-takeoff checks"	Set power, complete checks when practical.

Blank.

Appendix A
V-SPEED REFERENCE

V_1 Takeoff decision speed

V_2 Minimum takeoff safety speed

V_a Maximum design maneuvering speed

V_{at} Velocity at Threshold (Same as V_{ref})

V_c Design cruising speed

$1V_{co}$ Military climb out speed (single engine)

$2V_{co}$ Military climb out speed (two engines)

V_{crit} Military decision speed

V_f Design flap speed

V_{fe} Maximum flap extended speed

V_{le} Maximum landing gear extended.

V_{lo} Maximum landing gear operating speed

V_{mc} Minimum control speed with critical engine inoperative

V_{mo} Maximum operating limit speed

V_{ne} Never exceed speed

V_r Rotation speed

V_{ra} Rough air speed

V_{ref} Indicated airspeed at which the pilot should aim to cross the runway threshold in the landing configuration.

V_{fr} Flap retraction speed

V_s Power off stalling speed

V_{so} Stalling speed in the landing configuration

V_y Best rate of climb speed, 2 engine 0° flaps

V_{yse} Best single-engine rate of climb speed

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Appendix B
Glossary

ACRONYMS AND ABBREVIATIONS

ADF	automatic direction finder
AFM	Approved Flight Manual
AGL	above ground level
AIM	Airman's Information Manual
AP	autopilot
APART	annual proficiency and readiness test
AR	Army Regulation
ARNG	Army National Guard
ASDA	Accelerate stop distance available
ASR	airport surveillance radar
ATC	air traffic control
ATM	aircrew training manual
ATP	aircrew training program
AVCRAD	Aviation Classification and Repair Activity Depot
AVN	aviation
C	Celsius
Cal	calibrated
CDI	course deviation indicator
CG	center of gravity
CL	checklist
CONUS	continental United States
DA	Department of the Army
DAC	Department of the Army Civilian
DD	Department of Defense
DES	Directorate of Evaluation and Standardization
DME	distance measuring equipment
DOD	Department of Defense
EGT	Exhaust Gas Temperature
ETA	estimated time of arrival

ETE	estimated time enroute
F	Fahrenheit
FAA	Federal Aviation Administration
FAC	Flight activity category
FAR	Federal Aviation Regulation
FAT	free air temperature
FC	field circular
FD	flight director
FE	Flight Engineer
FIH	Flight Information Handbook
FL	flight level
FLIP	flight information publication
FM	field manual or frequency modulated
FPM	feet per minute
FS	flight simulator
FW	fixed wing
FWMEQC	Fixed Wing Multi-Engine Qualification Course
GR	grade
GWT	gross weight
HDG	heading
HQDA	Headquarters, Department of the Army
HSI	horizontal situation indicator
I	instrument
IAW	in accordance with
ICAO	International Civil Aviation Organization
IE	instrument flight examiner
IFF	identification, friend or foe (radar)
IFR	instrument flight rules
ILS	instrument landing system
IMC	instrument meteorological conditions
INS	inertial navigation system
IOAT	Indicated outside air temperature
IP	instructor pilot

KIAS	knots indicated airspeed
KCAS	knots calibrated airspeed
LDA	localizer type directional aid
LOC	localizer
MAP	missed approach point
MCP	maximum continuous power
MIN	minimum
MOI	methods of instruction
MOS	military occupational specialty
MTOP	maximum takeoff power
NA	not applicable/not available
NAS	National Airspace System
NATO	North Atlantic Treaty Organization
NAV	navigation
NAVAID	navigational aid
NBC	nuclear, biological, chemical
NDB	non directional radio beacon
Ng	engine gas generator speed
NGB	National Guard Bureau
NGR	National Guard Regulation
NOTAM	notice to airmen
PA	pressure altitude
PAX	passenger
PC	pilot in command
PF	pilot flying
PI	pilot
PNF	pilot not flying
POI	program(s) of instruction
QNE	height above standard datum plane
QNH	height above mean sea level
RC	Reserve Components
R/C	rate of climb
RL	readiness level

RNAV	area navigation
RPM	revolution per minute
RPS	reserve power system
RTOP	reserve takeoff power
RW	rotary wing
SDF	simplified direction facility
SOP	standing operating procedure
SP	standardization instructor pilot
SSN	social security number
TACAN	tactical air navigation
TAS	true airspeed
TC	training circular
TDA	tables of distribution and allowances
TGT	turbine gas temperature
TODA	takeoff distance available
TOLD	takeoff and landing data
TORA	takeoff run available
TM	technical manual
TOE	table(s) of organization and equipment
TRADOC	United States Army Training and Doctrine Command
U	unsatisfactory
US	United States (of America)
UT	unit trainer
VFR	visual flight rules
VMC	visual meteorological conditions
VOR	VHF omni-directional range
VSI	vertical situation indicator
WAT	weight for altitude & temperature
XFD	crossfeed
XPDR	transponder

APPENDIX C

REFERENCES

These are the sources quoted or paraphrased in this publication.

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